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IX.—STANDARD-SPECIES OF THE LINNEAN GENERA OF
TETRADYNAMIA.

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One of the Resolutions dealing with Nomenclature adopted by the recent Imperial Botanical Conference* was that "the principle of the Type-method of applying names should be formally accepted."† During the discussion it was made clear that what was proposed was the general acceptance of the Type-method, with provision for exceptions, so as to avoid any serious disturbance in established nomenclature. For this modification of the Type-method the name "Standard-method" was proposed, as it is essentially a method of applying generic and specific names respectively with reference to standard-species and standard-specimens. The standard-species is normally, but not invariably, the so-called "type-species."

Fears were expressed during the discussion that the acceptance of the Resolution might lead to far-reaching changes in generic nomenclature, but it was pointed out that these could be avoided in each case by adopting a substitute-species as a standard for the generic name in question, in the same way as exceptions to the rule of priority had been sanctioned by the adoption of a list of "nomina conservanda."

Such difficulties as arise in connection with the application of the Type-method to generic names are mostly confined to those published by Linné, some of the best known examples occurring in the *Cruciferae*. The type-species of each of the Linnean genera of *Tetradynamia* (which comprises the genus *Cleome* in addition to the *Cruciferae*) has therefore been determined below in general accordance with the Regulations for fixing generic types, published as a part of the Type-basis Code.‡

* *Kew Bull.* 1924, 173. † *Journ. Bot.* 1924, 243. ‡ *Science*, 1919, n.s. xlix. 333.

Of the thirty-one generic names concerned, the acceptance of the type-species as the standard-species would cause no change in nomenclature in twenty-five cases. The six remaining cases are considered on their own merits. As regards *Vella*, the number of species involved is so small (one now under *Carrichtera* and three under *Vella*), that it hardly seems worth while to make an exception, especially in view of the fact that *Carrichtera* was originally published as a "nomen abortivum." Substitute-species are suggested for *Draba*, *Alyssum*, *Sisymbrium*, *Erysimum* and *Cleome*, in order to avoid name changes.

The proportion of cases calling for exceptional treatment is much lower in other families than in *Cruciferae*, hence it may be anticipated that the Standard-method could be applied on the same lines to the whole of the Linnean genera of Phanerogams without evoking serious objection from those who are willing to accept the principle of "nomina conservanda."

Even those who admit of no exception to the Type-method will find it necessary to fix the type-species in many cases either arbitrarily or by decision of a committee of experts, since different authors may come to different conclusions starting from the same facts. The cases of *Bignonia** and *Pontederia*† may be cited as examples.

Out of the thirty-one genera here dealt with, seventeen were included in the second edition of Britton and Brown's Illustrated Flora of the Northern United States (1913). The type-species of these were determined by Dr. Britton in accordance with the provisions for selecting generic types, contained in the American Code.‡ These provisions were much the same as the Regulations subsequently incorporated in the Type-basis Code, except that they laid greater stress on the order in which the species were published, the first of several eligible species being accepted as the type. The type-species as determined in the present paper agree with those indicated by Dr. Britton in fourteen cases and differ in three, namely *Alyssum*, *Lepidium*, and *Lunaria*. Reasons for the selection of the particular species as the type are given in each case. An index of the generic names with the suggested standard-species is appended, with references to the pages where they are discussed.

The present paper was undertaken at the suggestion of Mr. T. A. Sprague, with whom I have discussed all the critical cases.

GENERA IN SP. PL. ED. 1, AND GEN. PL. ED. 5.

[The numbers prefixed to the generic names are those employed in Gen. Pl. ed. 5 (1754).]

713. *Myagrum* Linn. Sp. Pl. 640; Gen. Pl. ed. 5, 289.

Type-species: *M. perfoliatum*.

Based on *Myagrum* Tourn. Inst. t. 99, which is *M. perfoliatum*.

* Journ. Bot. 1922, 236, 363; et l.c. 1923, 191. † Papers Mich. Acad. Sc. 1923, iii. 91; Journ. Bot. 1924, 327. ‡ Bull. Torr. Bot. Club, 1907, xxxiv. 172-174.

714. *Vella* Linn. Sp. Pl. 641 ; Gen. Pl. ed. 5, 289.

Type-species : *V. annua*.

The first technical use of the generic name *Vella* in pre-Linnean literature was in Hortus Cliffortianus, 329, where Linné gave it to *Nasturtium silvestre valentinum* Clus., which he cited subsequently under *V. annua*. In Sp. Pl. ed. 1, Linné recognised two species, *V. annua* and *V. Pseudocytisus*. In 1821 A.P. De Candolle separated *V. annua* as the type of the genus *Carrichtera* Adans. emend., retaining the name *Vella* for *V. Pseudocytisus*. Otto Kuntze pointed out in 1903 (Post and Kuntze, Lexic. 585) that the type of *Vella* Linn. was *V. annua*, and proposed the new generic name *Pseudocytisus* for *V. Pseudocytisus* and its allies.

715. *Anastatica* Linn. Sp. Pl. 641 ; Gen. Pl. ed. 5, 290 (monotypic).

Type-species : *A. hierochuntica*.

716. *Subularia* Linn. Sp. Pl. 642 ; Gen. Pl. ed. 5, 290 (monotypic).

Type-species : *S. aquatica*.

717. *Draba* Linn. Sp. Pl. 642 ; Gen. Pl. ed. 5, 291.

Type-species : *D. verna*.

Suggested substitute-species : *D. incana*.

Draba Linn. was based on *Draba* Dill. Gen. 122. *Draba* Dill. included five species, of which the fifth was doubtfully referred to the genus, and should therefore be excluded from consideration. The first four species were (1) *Draba vulgaris caule nudo Polygoni folio hirsuto* Dill. Cat. 40 ; (2) *Paronychia myosotis Virginiana foliis subrotundis* Pluk. Phyt. t. 51, f. 5 ; (3) *Bursa pastoris minor foliis trifidis, aliquando multifidis, florum petalis bifidis, loculo oblongo* Moris. Hist. ii. 306 ; (4) *Thlaspi fruticosum incanum* C. Bauh. Pin. 108. No. (1), being the species to which Dillenius first applied the name *Draba* (Cat. Pl. Giss. 40), and the only one which included the name *Draba* in its diagnostic phrase, was evidently the type of *Draba* Dill., and presumptively of *Draba* Linn. It is *D. verna*. *D. verna* is, however, treated by many botanists as the type of an independent genus, *Erophila*, the name *Draba* being retained for the five other species of *Draba* in Sp. Pl. ed. 1, and their congeners. Hence the acceptance of *D. verna* as the standard-species would involve serious disturbance in established nomenclature. This might be justified if Linné had recognised type-species in the modern sense. As it is admitted, however, even by adherents of the type-method, that many at least of his genera were not "type-species genera" but "concept-genera," the question at issue is not what species Linné had chiefly in mind under *Draba*, but what genus. As *Draba* Linn., Sp. Pl. ed. 1, included a single species of one genus and five of another, the generic name should evidently be applied to the latter, namely to the genus comprising *D. alpina*, *pyrenaica*, *muralis*, *nemorosa*, and *incana*. The only species common to

these five and the first four of Dillenius is *D. incana*, which should therefore be accepted as a substitute-species.

718. **Lepidium** Linn. Sp. Pl. 643 ; Gen. Pl. ed. 5, 291.

Type-species : *L. Draba*.

Based on *Lepidium* Tourn. Inst. t. 103, hence the type should be selected from those species common to Tournefort and Linné, namely *L. latifolium*, *L. Iberis*, *L. Draba*, *L. chalepense*, *L. subulatum*. Of these, *L. Draba* agrees with Tournefort's figure, especially as to the fruit, and the others do not.

719. **Thlaspi** Linn. Sp. Pl. 645 ; Gen. Pl. ed. 5, 292.

Type-species : *T. arvense*.

Based on *Thlaspi* Tourn. Inst. t. 101, fig. F-L, and *Thlaspi* Dill. Gen. 123, t. 6. The former is *Aethionema saxatile*, and the latter is *Thlaspi arvense*, and the choice of type therefore lies between these two species. *T. arvense* should be selected, as the genus has by general agreement been restricted to that species and its allies. Moreover the genus which Linné had chiefly in mind was that typified by *T. arvense*. Of the nine species included in *Thlaspi* in Sp. Pl. ed. 1, four belong to *Thlaspi* (sensu Benth. et Hook. f.), and only two to *Aethionema*.

720. **Cochlearia** Linn. Sp. Pl. 647 ; Gen. Pl. ed. 5, 292.

Type-species : *C. officinalis*.

Based on *Cochlearia* Tourn. Inst. t. 101, which is *C. officinalis*.

721. **Iberis** Linn. Sp. Pl. 648 ; Gen. Pl. ed. 5, 292.

Type-species : *I. semperflorens*.

Iberis Linn. was ostensibly based on *Iberis* Dill. Gen. 123, of which *Nasturtium petraeum* Tab. (*Iberis nudicaulis*) was the type species. Linné's generic description, however, definitely excludes *I. nudicaulis* by the character "semina solitaria," and was obviously drawn up from the other species in Sp. Pl. ed. 1. *I. nudicaulis* was separated by R. Brown in 1812 as the type of a new genus, *Teesdalia*. Of the remaining eight species in the Species Plantarum, *I. gibraltarica*, *rotundifolia* and *cretica* had not been mentioned previously by Linné, and may therefore be excluded. The only two included both in Hortus Cliffortianus and Hortus Upsalensis, and therefore presumably the ones best known to Linné, were *sempervlorens* and *umbellata*. The former should be preferred, not only because it was first in order in the Species Plantarum, but because *I. umbellata* was mentioned as being somewhat exceptional.

722. **Alyssum** Linn. Sp. Pl. 650 ; Gen. Pl. ed. 5, 293.

Type-species : *A. incanum*.

Suggested substitute-species : *A. montanum*.

Alyssum Linn. was based on *Alyssum* Tourn. Inst. 217, t. 104, of which the nucleus was *Alysson* C. Bauh. Pin. 107. The type-species of *Alysson* C. Bauh. was *Thlaspi Alysson dictum campestre*

majus (*Alyssum Alyssoides*). *A. Alyssoides* is therefore the historic type of *Alyssum*. But as Linné excluded it from *Alyssum* in Hort. Cliff. and Sp. Pl. ed. 1, placing it in the genus *Clypeola*, it cannot be treated as the type-species of *Alyssum* Linn. (1753). The type-species of *Alyssum* Linn. should obviously be selected from one of the species common to *Alysson* Tourn. and *Alyssum* Linn., namely *spinosum*, *montanum*, *halimifolium* and *incanum*. *Alysson* Tourn. t. 104 represents details of the flower and fruit of at least 3 distinct species—figs. A, C, D, E represent *A. incanum*, and figs. F, G and K probably represent *A. montanum*, *A. spinosum* and *A. maritimum* respectively. The species which Tournefort chiefly figured was *A. incanum*, which may therefore be regarded as the type of *Alysson* Tourn. and presumptively of *Alyssum* Linn. This is confirmed by Linné's remark, "*Essentialis character consistit in filamentis minoribus denticulo introrsum basi inserto*" (Gen. Pl. ed. 5, 293). Furthermore *A. incanum* was the only *Alyssum* native in Sweden and included in Fl. Suecica.

As *A. incanum* is the type of *Berteroa* DC., which is regarded as generically distinct by many botanists, it is convenient to adopt a substitute-species.

Of the three other species common to Tournefort and Linné, *A. spinosum* and *A. halimifolium* are now referred to *Lobularia* Desv. (Konig Adans.), *A. montanum* being still retained in the genus. It is therefore desirable to adopt *A. montanum* as the substitute-species.

723. **Clypeola** Linn. Sp. Pl. 652 ; Gen. Pl. ed. 5, 293.

Type-species : *C. Jonthlaspi*.

Clypeola Linn. was based on *Jonthlaspi* Tourn. The only species common to both Linné and Tournefort is *C. Jonthlaspi*, which is therefore the type.

724. **Biscutella** Linn. Sp. Pl. 652 ; Gen. Pl. ed. 5, 294.

Type-species : *B. auriculata*.

Biscutella Linn. was based on *Thlaspidium* Tourn. Inst. t. 101. In the Species Plantarum Linné recorded two species of *Biscutella*, namely *auriculata* and *didyma*. Both these are represented in Tournefort's figure, and both were well known to Linné. Since *B. auriculata* is mentioned first in Sp. Pl. and in Hort. Cliff. it may be taken as the type.

725. **Lunaria** Linn. Sp. Pl. 653 ; Gen. Pl. ed. 5, 294.

Type-species : *L. rediviva*.

Lunaria Linn. was based on *Lunaria* Tourn. Inst. t. 105, which included both the Linnean species. *L. rediviva* being a native of Sweden was better known to Linné than *L. annua*, and as it was also the first species enumerated in Sp. Pl. ed. 1, it should be regarded as the type. Furthermore, Linné mentioned that *L. annua* was doubtfully distinct from *L. rediviva*, thus implying that the latter was the better known.

726. *Dentaria* Linn. Sp. Pl. 653; Gen. Pl. ed. 5, 295.

Type-species: *D. pentaphyllos*.

Dentaria Linn. was based on *Dentaria* Tourn. Inst. t. 110. Both the rhizome and the fruit of Tournefort's figure represent *D. pentaphyllos*, which may therefore be treated as the type species of *Dentaria* Linn.

Although *D. bulbifera* was the only species of *Dentaria* in Hortus Cliffortianus, and the one best known to Linné, it cannot merely on these grounds be regarded as the type. Furthermore it is highly improbable that Linné described the fruit of *Dentaria* from *D. bulbifera*, as the fruit of this species scarcely ever develops, as he himself states in Hortus Cliffortianus.

727. *Cardamine* Linn. Sp. Pl. 654; Gen. Pl. ed. 5, 295.

Type-species: *C. pratensis*.

Cardamine Linn. was based on *Cardamine* Tourn. Inst. t. 109, which represents *C. pratensis*. Linné recognised four sections of the genus, with simple, ternate, pinnate, and supra-decompound leaves respectively. The pinnate-leaved section is evidently the most representative, comprising as it does 8 out of the 15 species. Of these eight, *C. pratensis* was the first to be described (Brunfels, Herb. Viv. Ic. 213; 1532), and was also, as stated above, the one figured by Tournefort, and the best known to Linné. It was included in Hortus Cliffortianus, Flora Suecica and Flora Lapponica.

728. *Sisymbrium* Linn. Sp. Pl. 657; Gen. Pl. ed. 5, 296.

Type-species: *S. Nasturtium-aquaticum*.

Suggested substitute-species: *S. altissimum*.

Sisymbrium Linn. was based on *Sisymbrium* Tourn. Inst. t. 109, which undoubtedly represents *S. Nasturtium-aquaticum*. This is the first species mentioned by Linné, the one best known to him, extremely common, widely distributed and an economic plant.

According to the type-basis code this is unquestionably the type-species of *Sisymbrium* Linn. But Linné's genera were not "type genera" but "concept genera", and it is not a question of what species Linné had chiefly in mind, but of what genus. In Species Plantarum ed. 1, sixteen species of *Sisymbrium* are recorded. Of these, eight belong to *Sisymbrium* sensu Benth. et Hook. f.; three to *Nasturtium* sensu Benth. et Hook. f.; two to *Diploaxis*, and one each to *Arabis*, *Brassica* and *Dontostemon*. Therefore Linné's *Sisymbrium* was mainly *Sisymbrium* sensu Benth. et Hook. f., and indeed of most authors. In order to avoid far-reaching changes in nomenclature it seems desirable to select as a substitute-species one of these eight species. Linné divided them among three of his sections, five of them constituting the largest section "*foliis bipinnatis*." The substitute-species should therefore be chosen from one of these species, viz., *S. asperum*, *tanacetifolium*, *Sophia*, *altissimum* or *Irio*. The first two were not mentioned previously by Linné in any of his works

and may therefore be excluded from consideration. *S. Sophia* is mentioned as exceptional (Gen. Pl. ed. 5, 296), and so may also be excluded. Linné states how *S. Irio* differs from *S. altissimum*, thus implying that the latter was better known. *S. altissimum* therefore should be selected as the substitute-species.

729. **Erysimum** Linn. Sp. Pl. 660 ; Gen. Pl. ed. 5, 296.

Type-species : *E. officinale*.

Suggested substitute-species : *E. cheiranthoides*.

Erysimum Linn. was based on *Erysimum* Tourn. Inst. t. 111. Tournefort gave the vernacular name as "Velar" or "Tortelle," which is *E. officinale*, and as this is the only species common to Linné and Tournefort it is undoubtedly the type.

The acceptance of *E. officinale* as the standard-species of *Erysimum* would, however, involve the application of the name *Erysimum* to the genus generally known as *Sisymbrium*, and is therefore to be deprecated. In this case it seems desirable to follow the method of residue. Linné originally included four species in *Erysimum* : (1) *officinale*, (2) *Barbarea*, (3) *Alliaria*, (4) *cheiranthoides*. Of these, *E. Alliaria* was treated by Scopoli in 1760 as the type of an independent genus *Alliaria* and subsequently transferred by him to the genus *Sisymbrium*. *E. officinale* was transferred by Scopoli in 1772 to *Sisymbrium*. *E. Barbarea* was treated by R. Brown in 1812 as the type of a new genus *Barbarea*. The name *Erysimum* thus became restricted to the genus typified by *E. cheiranthoides*, which is suggested as the substitute-species, as this will enable the name to be retained in the generally accepted sense.

730. **Cheiranthus** Linn. Sp. Pl. 661 ; Gen. Pl. ed. 5, 297.

Type-species : *C. Cheiri*.

Cheiranthus Linn. was based on *Leucoium* Tourn. Inst. t. 107, which represents *C. Cheiri*. Tournefort gave the vernacular name as "Giroflier" or "Violier," which indicates that he regarded the common Wall-flower (*C. Cheiri*) as typical.

731. **Hesperis** Linn. Sp. Pl. 663 ; Gen. Pl. ed. 5, 297.

Type-species : *H. matronalis*.

Hesperis Linn. was based on *Hesperis* Tourn. Inst. t. 108, which, having regard to its vernacular name "Juliane" or "Juliene," was evidently typified by *H. matronalis*. This species agrees with Tournefort's figure.

732. **Arabis** Linn. Sp. Pl. 664 ; Gen. Pl. ed. 5, 298.

Type-species : *A. alpina*.

The genus *Arabis* Linn. included seven species. Of these, *A. alpina* was the first species enumerated in Sp. Pl., and was obviously the best known to Linné. It was the only species of *Arabis* mentioned in the Hortus Cliffortianus.

733. **Turritis** Linn. Sp. Pl. 666 ; Gen. Pl. ed. 5, 298.

Type-species : *T. glabra*.

Turritis Linn. was based on *Turritis* Dill. Nov. Pl. Gen. p. 120, t. 6. The figure given by Dillenius agrees more closely with *T. glabra* than with either of the other species. *T. glabra* is also first in order in Hort. Cliff. and in Sp. Pl.

734. **Brassica** Linn. Sp. Pl. 666 ; Gen. Pl. ed. 5, 299.

Type-species : *B. oleracea*.

Brassica Linn. was based on *Brassica* Tourn. Inst. t. 106 and *Rapa* Tourn. Inst. t. 113. Tournefort gave the vernacular name as "Chou," which is *B. oleracea*. This agrees with Tournefort's figure and is mentioned first in Hort. Cliff.

735. **Sinapis** Linn. Sp. Pl. 668 ; Gen. Pl. ed. 5, 299.

Type-species : *S. alba*.

Sinapis Linn. was based on *Sinapis* Tourn. Inst. t. 112. More than one species were represented in Tournefort's plate. *S. alba* unquestionably agrees with figs. E and G H I, and it is mentioned first in Hort. Cliff. It may therefore be accepted as the type-species.

736. **Raphanus** Linn. Sp. Pl. 669 ; Gen. Pl. ed. 5, 300.

Type-species : *R. sativus*.

R. sativus was the species best known to Linné. He based his genus on *Raphanus* Tourn. Inst. t. 114, which agrees with *R. sativus*. The vernacular name cited by Tournefort was "Raifort," which is also *R. sativus*.

737. **Bunias** Linn. Sp. Pl. 669 ; Gen. Pl. ed. 5, 300.

Type-species : *B. Erucago*.

Bunias Linn. was based on *Erucago* Tourn. Inst. t. 103. *B. Erucago* is the only species that agrees with Tournefort's figure, and the only one mentioned in Hort. Cliff.

738. **Isatis** Linn. Sp. Pl. 670 ; Gen. Pl. ed. 5, 301.

Type-species : *I. tinctoria*.

Isatis Linn. was based on *Isatis* Tourn. Inst. t. 100. The vernacular name given by Tournefort was "Pastel," which is *I. tinctoria*. This species agrees with Tournefort's figure, and was the only one mentioned in Hort. Cliff.

739. **Crambe** Linn. Sp. Pl. 671 ; Gen. Pl. ed. 5, 301.

Type-species : *C. maritima*.

Crambe Linn. was based on *Crambe* Tourn. Inst. t. 100, which represents *C. maritima*. It was the species best known to Linné, and the first in order in Hort. Cliff. and Sp. Pl.

740. **Cleome** Linn. Sp. Pl. 671 ; Gen. Pl. ed. 5, 302.

Type-species : *C. gynandra* (*Gynandropsis pentaphylla*).

Suggested substitute-species : *C. ornithopodioides*.

Cleome Linn. was based on *Sinapistrum* Tourn. Inst. t. 116. The type-species was undoubtedly *C. gynandra*, which agrees

with the figure in Tournefort and was the first mentioned in Hort. Cliff. But *C. gynandra* is now treated as the type of an independent genus, *Gynandropsis*, so that in order to avoid confusion it is expedient to adopt a substitute-species. This should be selected from those species not mentioned by Linné as exceptional. Species nos. (1) and (2) of Sp. Pl. differ from the rest in being gynandrous, nos. (4) and (5) are exceptional in having 12 stamens, and no. (3) in having 24 stamens. There remain nos. (6) *ornithopodioides*, (7) *violacea* and (8) *monophylla*. Nos. (6) and (7) were both included in Hort. Cliff. and were represented in Linné's Herbarium in 1753 (Jackson, Ind. Linn. Herb. 58, 59), whereas *monophylla* was not, and may therefore be excluded from consideration. Of the two remaining species, *C. ornithopodioides* was undoubtedly better known to Linné, as it was grown in the Botanic Garden at Upsala and *violacea* was not. *C. ornithopodioides* is therefore suggested as the substitute-species.

ADDITIONAL GENERA IN SP. PL. ED. 2, AND GEN. PL. ED. 6.

[The numbers prefixed to the generic names are those employed in Gen. Pl. ed. 6 (1764).]

806. **Peltaria** Jacq. Enum. Hort. Vindob. 260 (1762); Sp. Pl. ed. 2, 910; Gen. Pl. ed. 6, 336 (monotypic).

Type-species: *P. alliacea* Jacq.

810. **Ricotia** Linn. Sp. Pl. ed. 2, 912 (1763); Gen. Pl. ed. 6, 337 (monotypic).

Type-species: *R. Lunaria* (Linn.) DC.

816. **Heliophila** Burm. f. ex Linn. Sp. Pl. ed. 2, 926 (1763); Gen. Pl. ed. 6, 340.

Type-species: *H. integrifolia* Linn.

Linné adopted the manuscript name *Heliophila* from N. L. Burmann. As he attributed the diagnostic phrase of *H. integrifolia* to Burmann, and did not cite the latter under *H. coronopifolia*, *H. integrifolia* may be regarded as the type-species.

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X.—DIAGNOSES SPECIERUM NOVARUM GENERIS DIOSCOREAE.

D. PRAIN et I. H. BURKILL.

Dioscorea (Stenophora) biserialis : apud Stenophoras asiaticas nigricantes staminibus tribus majoribus tribus minoribus insignis ; inter *D. zingiberensem* C. W. Wright et *D. panthaicam* nob., quibus stamina aequalia sex atque *D. Collettii* nob. et *D. hypoglaucae* Palibin, quibus stamina aequalia tria, quasi medians.

Rhizoma ignotum. *Caulis* glaber, ad foliorum ortus bistipularis—si processus molles sed spiniformes Dioscoreae hujus et Dioscorearum similium stipulas nuncupare licet, laevis. *Folia* alterna, glabra, siccitate grisea, basi cordata, ad mediam partem abrupte contracta, apice mucronata, 7-nerviâ, ad 4 cm. longa, ad 4.5 cm. lata : petiolus lamina aequilongus. *Flores maris* in spicis axillaribus 1.5–2.5 cm. longis dispersi, sessiles vel subsessiles : spicarum axis minutissime scabridus. *Perianthium* cupuliforme. *Sepala* 2 mm. longa, ovata. *Petala* similia, apice rotundata. *Stamina* 6, biserialia, majora ante sepala, minora ante petala : connectivum latum. *Flores foemineae* in spicis 20–22 mm. longis. *Sepala petalaeque* ovata, subsimilia. *Capsulae* iis *D. hypoglaucae* longiores, reflexae, viridi-nigrescentes : alae exacte semiobovatae, ad 25 mm. longae, ad 8 mm. latae. *Semina* circumcirca alata : ala pallida.

CHINA. Yunnan: in dumetis ad Mahong 2800 m. alt., *Maire* ! et in montibus Tong-shan, *Forrest* 10951 !

The species of the section *Stenophora* which are fully known all possess a rhizome; all have flowers with a disk and have reflexed capsules; the stem in all twines to the left. The species are all either Asiatic or American; most of them are sub-tropical.

Dioscorea (Stenophora) Seniavinii: inter species staminibus tribus tantum ornatas ex affinitate *D. Collettii* nob.; foliis nequaquam repandis sed exacte cordatis differt.

Rhizoma ignotum. *Caules* glabri, inermes. *Folia* alterna, membranacea, glaberrima, exacte cordata, breviter acuminata, 9-nervia, ad 4 cm. longa vel forsán longiora, ad 3·5 c.m. lata: petiolus lamina aequilongus. *Flores maris* vel solitarii vel 2–3-ni in spicis 3–5 cm. longis; axis angulatus, glaber. *Perianthium* crateriforme, lobis in anthesin vix horizontalibus. *Sepala* ovata, obtusa, 1·5 mm. longa. *Petala* similia. *Stamina* tria, ante sepala, vix didynama: staminodia breviora. *Flores foeminei* ignoti.

“CHINA AUSTRALIOR,” Seniavin in Herbario Petropolitano.

The authority to whom science is indebted for the communication of this Chinese species was, if we are not mistaken, the distinguished M. Seniavin, Russian Ambassador to China during the period 1838–51. While resident in China M. Seniavin lost no opportunity that offered itself of procuring botanical material for transmission to the Imperial Botanic Garden at St. Petersburg. The actual collector of this particular specimen can hardly have been M. Seniavin himself; more probably the specimen was secured for him by some tea-merchant, who had collected it while on a business-journey in the province of Fokien.

Dioscorea (Stenophora) palawana; species distinctissima, foliis pergamentaceis e basi cordata magnopere auriculatis.

Rhizoma horizontale, ramosum. *Caules* duriusculi, glabri, laeves. *Folia* alterna, pergamentacea, basi cordata, distincte auriculata, auriculis subrhomboidalibus, ad 10 cm. longa, ad 7 cm. lata; venae conspicuae: petiolus lamina aequilongus. *Flores maris* hinc inde secus axin racemosum elongatum glomerulati: axis glaber, angulatus: pedicelli ad 10 mm. longi. *Perianthium* hypocrateriforme, lobis fere horizontalibus. *Sepala* ovata, ad 1·5 mm. longa. *Petala* paullulo angustiora. *Stamina* sex: filamenta brevía. *Flores foeminei* ignoti.

INSULAE PHILIPPINENSES. In insula Palawan, apud Silanga, *Merrill* 9584 !

Dioscorea (Stenophora) keduensis; species forsán ex affinitate *D. daunaeae* nob. et *D. Ridleyi* nob.: ab hac differt pedicellis longioribus, ab illa foliis cordatis.

Rhizoma ignotum. *Caules* ut videtur inermes, leviter striati, glabri. *Folia* alterna, longe ovato-cordata vel cordato-

linguiformia, ad 14 cm. longa, ad 5 cm. lata, 5-nervia, glabra, venis distinctis: petiolus dimidio laminae aequilongus. *Flores maris* 1-2-ni, in racemos dispositi: axis angulatus vel sub anthesin subalatus, glaber: alabastra pyriformia: pedunculi ad 5 mm. longi. *Perianthium* hypocrateriforme, lobis in aestivatione horizontalibus. *Sepala* anguste ovata, obtusa, glabra, 2 mm. longa. *Petala* similia, interdum sepalis longiora, obtusiora. *Stamina* sex, incurva. *Flores foeminei* ignoti.

MALAYSIA. Java: in monte Gunong Menjir ad 1200 m. alt., *Docters van Leeuwen* 344: atque Celebes: in monte Gunong Kankeoukea, *Rachmat* 751.

Typi in herbario Horti botanici Bogoriensis conservati.

Dioscorea (Stenophora) platanifolia: cum *D. nipponica* Makino, foliis cordatis palmatifidis congruit; sed pedicellis longis conspicue differt.

Rhizoma ignotum. *Caules* juniores hirsutiusculi dein glabrescentes, aliquatenus siccitate striati. *Folia* alterna, majuscula, supra puberula, infra pubescentia, cordato-palmatifida, 11-dentata, ad 13 cm. longa, ad 11 cm. lata, 9-nervia: petiolus lamina longior. *Flores maris* in paniculas angustas longas dispositi: axis ad 20 cm. longus, pubescens, subtriangularis. *Perianthium* hypocrateriforme. *Sepala* viridia, tenuia, ovata, obtusa, vix 1 mm. longa. *Petala* aequilonga, apice rotundata. *Stamina* sex: filamenta incurva. *Flores foeminei* ignoti.

CHINA. Yunnan: in monte Fa-hai ad 3200 m., *Maire* 203! inter rupes montis Pe-long-tsin ad 3200 m., *Maire*! in valle fluminis Mekong ad 2450 m., *Forrest* 13060! in montibus Li-chiang inter 2760 m. et 3070 m., *Forrest* 6139! in montibus apud Yung-peh, ad 2450 m., *Forrest* 15069! in montibus prope Chien-chuan, *Forrest* 12854!

Typi in herbario Horti botanici Edinensis.

Dioscorea (Paramecocarpa) bullata: a *D. flabellifolia* nob. differt foliis bullatis.

Partes inferiores ignotae. *Caules* juniores dense fulvo-pubescentes, dein glabrescentes, siccitate canaliculati. *Folia* alterna (? semper), late cordata, ad 9 cm. longa, ad 11 cm. lata, abrupte mucronata, bullata, sparse puberula, 11-nervia. *Flores maris* ignoti. *Flores foeminei* virides, 50-200 in racemos ad 40 cm. longos dispositi: axis ad 40 cm. longus, dense griseo-pubescent vel aliquatenus glabrescent, angulatus: bracteae fere subulatae, sub aestivationem 1 mm. longae sed fructu maturo longiores cum fructuum pedicellis connatae. *Perianthium* medio infundibuliforme, lobis aliquatenus reflexis. *Sepala* anguste ovata, extra pubescentia, apice rotundata, 2 mm. longa. *Petala* paullulo longiora. *Staminodia* sex. *Capsulae* horizontales, ut videtur iis *D. flabellifoliae* similes.

MALAYSIA. Borneo: ad Kiau versus pedes montis Kinabalu, *Clemens* 10155.

Typus in herbario apud Manillam.

The species of the section *Paramecocarpa* are characterised by having poisonous tubers, infundibuliform flowers and horizontal capsules: the stem twines to the left. All the species are Malayan.

Dioscorea (Paramecocarpa) piscatorum, Prain et Burkill in Gard. Bull. Straits Settlements 3 (1924) pp. 123, etc.: Burkill et Holttum in eodem (1924), p. 259: Ridley, Flor. Mal. 4, p. 319 (1924). *D. sp.*, Prain et Burkill in Jour. As. Soc. Bengal 73, (1904), p. 186: Burkill in Gard. Bull. Straits Settlements 3, (1923), p. 3 cum ic. *D. sp.* "*tubaubi*," Ridley, Mat. Flor. Mal. Penins., Monoc. 2, (1907), p. 84, et in Agric. Bull. Straits and F.M.S., 1908, p. 444: Prain et Burkill in Jour. As. Soc. Bengal, N.S. 10, (1914), p. 13: species a *D. flabellifolia* nob. caulibus aculeatissimis distinguenda.

Tubera subclavata vel palmatifida, brevia, saepe armata, carne fibrosa venenosa. *Caules* aculeis magnis confluentibus ad basin cristati vel in partibus remotis aculeis numerosissimis asperi. *Folia* alterna, ovato-cordata, acuminata, ad 18 cm. longa, ad 14 cm. lata, 9-nervia, pagina inferiore atque pagina superiore glabra, nitentia, nervis infra elevatis: petiolus lamina aequilongus, aculeatus. *Flores* ignoti.

MALAYSIA. Sumatra: Sibolangit; in montibus Bukit Semaik et Bukit Kluang, *Mohamad Nur* 7407! 7449! Peninsula Malayana: Perak; prope Taiping, *Henderson*! Sungei Siput, *Machado*! infra Jor, *Burkill et Mohamad Haniff* 13449! Pahang; in insula Tiuman ad Joara, *Burkill*!

Dioscorea (Lasiophyton) Bonatiana: inter affines differt capsulis angustis, et basi et apice acutis.

Partes inferiores ignotae. *Caules* inermes, teretes, leviter pilosi. *Folia* alterna, 3-5-foliolata: foliola media anguste subrhomboideo-obovata, basi acuta, ad 6 cm. longa, ad 2 cm. lata, penninervia, nervis lateralibus inferioribus ad mediam partem attingentibus, pubescentia: foliola externa dimidiam partem folioli medii aequantia: petiolus foliolo medio aequilongus: petioluli 1-2 mm. longi. *Bulbilli* nigricantes. *Flores maris* ignoti. *Flores foeminei* in speciebus dispositi: axis albobilosus. *Sepala* ovata, obtusa, 1 mm. longa, extra subpilosa. *Petala* angustiora, breviora. *Staminodia* biformia. *Capsulae* (immaturae) subpilosae, apice et basi acutae, angustae, 18 mm. longae: alae 2.5 mm. latae.

CHINA. Yunnan: sine loco exacto, *Herb. Bonati* 7330 B!

Typus in herbario Horti botanici Edinensis.

The species of the section *Lasiophyton* have tubers that are at times poisonous, at times edible: the flowers open very slightly; the capsules are reflexed or horizontal; the stem twines to the left. All the species are African or Asiatic.

Dioscorea (Enantiophyllum) lineari-cordata: ab affinibus *D. opposita* Thunb. et *D. japonica* Thunb. foliis lineari-cordatis distinguenda.

Partes inferiores ignotae. *Caules* glabri, teretes. *Folia* inferiora alterna, superiora opposita, e basi angusta cordata lineari-lanceolata, ad 12 cm. longa, ad 14 mm. lata, 7-nervia, glabra. *Flores maris* in spicis axillaribus 4 cm. longis 20–30-ni dispositi, majusculi: axis glaber. *Sepala* ovata, supra rotundata, 2.5 mm. longa, brunneo-lineolata. *Petala* paullulo minora. *Stamina* sex, filamentis antheris aequilongis. *Flores* foeminei ignoti.

CHINA. Kwangsi: prope Wu-chow, *Tsong* 3712!

Typus in herbario apud Manillam.

The species of the section *Enantiophyllum* have elongated tubers which usually are edible: the flowers are without a disk and open very slightly; the capsules are straight; the stem twines to the right. All the species are African or Asiatic.

Dioscorea (Enantiophyllum) bancana: a *Dioscorea Havilandii* nob. differt foliis ovatis nec latissime ellipticis.

Partes inferiores ignotae. *Caules* inermes, subquadrangulares, glabri. *Folia* alterna (? semper), coriacea, glaberrima, exacte ovata vel ovato-elliptica, basi rotundata, apice acuminata, ad 15 cm. longa, ad 6 cm. lata, 5-nervia, nervis supra distinctis infra elevatis, margine aliquatenus indurata: petiolus ad 3 cm. longus. *Flores maris* in spicis erectis dispositi; spicae in ramis aphyllis pendulis insidentes: axis spicarum ad 10 cm. longus, angulatus, glaber: alabastra globosa, aliquatenus porrecta, nec cum axi angulos rectos formantia. *Sepala* e basi latiuscula ovata, apice rotundata, vix 1 mm. longa. *Petala* navicularia, paullulo breviora. *Stamina* sex, 0.5 mm. longa. *Flores foeminei* ad 25 in spicis decurvatis 1–3-nis dispositi: axis angulatus, glaber. *Sepala* crassa, ovata. *Petala* paullulo breviora. *Capsulae* ignotae.

MALAYSIA OCCIDENTALIS. Banca: sine loco exacto, *Horsfield!* ad Pangkal Pinang, *Teijsmann!*

Dioscorea (Enantiophyllum) Moultonii: ex affinitate *D. Havilandii* nob. et *D. laurifoliae* Wall.; differt spicis masculis longioribus.

Partes inferiores ignotae. *Caules* inermes, teretes. *Folia* alterna, coriacea, late lanceolata, basi rotundata, apice acuminata, ad 8 cm. longa, ad 2 cm. lata, 5-nervia, glabra; area media ut folia late lanceolata, nervis medio proximis fere submarginalibus: margo crassa: petiolus 0.5 cm. longus. *Flores maris* ad 60 vel plures in spicis elongatis erectis dispositi: axis ad 10 cm. longus, conspicue angulatus, glaber: alabastra elongata. *Sepala* e basi latissima ovata, apice obtusa, 1 mm. longa. *Petala* breviora, crassa, apice rotundata. *Stamina* sex. *Flores foeminei* ignoti.

MALAYSIA. Borneo: prope Kuching, *Merrillii mercenarius* 2612!

Typus in herbario apud Manillam.

Dioscorea (Enantiophyllum) madiunensis: species ex affinitate ut videtur *D. filiformis* Blume et *D. vilis* Kunth, quarum capsulae ignotae sunt; differt foliis.

Partes inferiores ignotae. *Caules* inermes, glabri, striati. *Folia* alterna (? semper), longe ovata, acuminata, ad 10 cm. longa, ad 3.5 cm. lata, glaberrima, 7-nervia: area media elliptica basi et apice acutissima: petiolus ad 3 cm. longus. *Flores maris* ignoti. *Flores foeminei* etiam ignoti. *Capsulae* pedicellatae, pedicellis usque ad 15 mm. longis, supra pedicellum atque ad apicem alis retusae: alae ad 27 mm. longae, ad 30 mm. latae, distincte latiores quam semicirculares. *Semina* circumcirca marginaliter alata, atro-castanea.

MALAYSIA. Java: in monte Sigogor, districtus Ponorogo, Koorders 29205 b!

Typus in herbario Horti botanici Bogoriensis.

Dioscorea (Enantiophyllum) Vanvuurenii: magis ad *D. filiformem* Blume spectat, atque ad *D. vilem* Kunth, quarum spicae apogeotropicae sunt; differt foliis basi rotundatis.

Partes inferiores ignotae. *Caules* inermes, teretes, glabri. *Folia* opposita, ovata, breviter acuminata, ad 4 cm. longa vel longiora, ad 2 cm. lata vel latiora, glaberrima, 5-nervia: area media elliptica: petiolus ad 2 cm. longus. *Flores maris* in spicis erectis 1-4-nis ad 5 cm. longis dispositi: alabastra globosa, oblique porrecta. *Sepala* quadrato-ovata, obtusa. *Petala* subclavata, breviora. *Stamina* sex. *Flores foeminei* ignoti.

MALAYSIA. Celebes: ad Lahondape, Rachmat 632, in exped. Vanvuurenii.

Typus in herbario Horti botanici Bogoriensis.

Dioscorea (Enantiophyllum) gracilipes: species spicis filamentosis ut fila ferrea rigidis distincta.

Partes inferiores ignotae. *Caules* rigidiusculi, teretes, glabri. *Folia* opposita (? semper), late lanceolata, infra rotundata, ad 8 cm. longa, ad 2 cm. lata, 5-nervia, glabra: petiolus ad 3 cm. longus, basi 1-aculeatus. *Flores* ignoti. *Capsulae* 1-3-nae in apices axium ut fila ferrea rigidorum: alae latiores quam semicirculares, ad 14 mm. longae, ad 11 mm. latae. *Semina* circumcirca alata, fumosa.

SIAM INFERIOR. In insula Pulau Tebun, prope Pungah, Mohamad Haniff et Mohamad Nur 3603!

Typi in herbariis Horti Kewensis et Horti Singapurensis.

Dioscorea (Enantiophyllum) Owenii est species culta atque pro cibum habenda inter Hainanenses sub nomine "kiu-tu"—scilicet tuber zingiberoideum—de qua indicationes iconesque in Gardens Bulletin Straits Settlements, 2 (1918) pag. 90 t. 7, typis impressae sunt.

Tubera clavata, variabilia, nonnunquam simplicia, nonnunquam irregularia vel furcata, majora ad 20 cm. longa, cuticulo brunneo, carne alba. *Caules* ad 4 m. alti, glabri.

Folia glaberrima, basalia hastata alterna, media longe deltoideo-hastata, apicalia elongato-cordata, saepissime opposita, ad 14 cm. longa, ad 6 cm. lata, vel nonnulla ad 9.5 cm. lata: area media lanceolata: nervi secundarii debiles irregulares: petiolus dimidium laminae aequans. *Flores* ignoti.

SINGAPORE, in hortis G. P. Owenii atque aliorum.

Dioscorea (Enantiophyllum) calcicola: inter species glaberrimas spicis patentibus, axi recto, capsulis glomeratis distincta.

Partes inferiores ignotae. *Caules* graciles, teretes. *Folia* alterna vel opposita, glabra, supra radiantia, infra sine radiatione, basi cordata vel rotundata, anguste lanceolata, gradatim in mucronem angustata, ad 12 cm. longa, ad 1.6 cm. lata, 5-nervia: area media lineari-lanceolata: petiolus ad 2.5 cm. longus. *Flores maris* in spicis axillaribus compositi: axis glaber, ad 4 cm. longus, angulatus, siccitate rubens, ad 40 mm. longus: alabastra basi latissima. *Sepala* apice acuta, 1 mm. longa. *Petala* breviora, obovata. *Stamina* sex, sepalis breviora. *Flores foeminei* similia, sepalis petalisque crassis. *Capsulae* glomeratae, apice aliquatenus retusae, basi 1–3 mm. pedicellatae: alae quam semicirculares latiores, paullulo obliquae, 16 mm. longae, 12 mm. latae.

SIAM INFERIOR et PENINSULA MALAYANA. Siam: Pungah, in colle calcareo ad 160 m. supra mare, *Mohamad Haniff et Mohamad Nur* 3974. Pulau Tebun prope Pungah, *Mohamad Haniff et Mohamad Nur* 3601! Kedah: in Monte 'Kedah Peak,' *Mohamad Haniff et Mohamad Nur* 5189!

Typi in herbariis Horti Kewensis et Horti Singapurensis.

Dioscorea (Enantiophyllum) gedensis: *D. glabrae* Roxb. similis, sed capsulis majoribus et foliis siccitate viridioribus differt.

Partes inferiores ignotae. *Caules* teretes, laeves. *Folia* opposita vel subopposita, ovata vel aliquatenus cordata, acuminata, ad 8 cm. longa, ad 4 cm. lata, glaberrima, 5-nervia: area media ovato-elliptica: petiolus ad 3 cm. longus. *Flores* ignoti. *Capsulae* majusculae, nitentes, e pedicello brevi basi subcordatae, ad apicem retusae: alae quam semicirculares latiores, ad 28 mm. longae, ad 25 mm. latae.

MALAYSIA. Java: in monte Gunong Gedeh, prope Tjibodas, *Arsin* 19725!

Typus in herbario Horti botanici Bogoriensis.

Dioscorea (Enantiophyllum) Sitamiana: inter *Enantiophylla* glabra spicis diffusis ad *D. glabram* Roxb. accedit; differt foliis nigricantibus tenuissimis.

Partes inferiores ignotae. *Caules* glabri, inermes, graciles, brunnescentes. *Folia* chartacea, ovato-oblonga, abruptius acuto-acuminata, basi rotundata vel latissime cuneata, margine minutissime undulata, ad 6 cm. longa, ad 2.25 cm. lata: area media obovato-lanceolata: venae secundariae oblique trajectae, prope basin lepidibus perminutis parcissime oblecta, caeterum

glabra : petiolus ad 2 cm. longus. *Flores maris* in spicis 4–5 cm. longis remote 20–30-floris secus ramulos foliis carentes 10–12 cm. longis verticillatim dispositi : axis glaber : alabastra basi latiuscula. *Sepala* suborbicularia, obtusa, glabra. *Petala* oblonga, obtusa, sepalis parum angustioribus. *Stamina* sex, brevia. *Flores foeminei* ignoti.

MALAYSIA. Borneo : prope fluminem Sarawak, *Sitam* ex Haviland !

Typus in herbario Horti botanici Kewensis.

Dioscorea (Enantiophyllum) Nieuwenhuisii : inter species glabras spicis diffusis ex affinitate *D. glabrae* Roxb. ; foliis siccitate viridibus, 7-nerviis insignis.

Partes inferiores ignotae. *Caules* inermes, glabri. *Folia* opposita (forsan basalia alterna), glabra, rigidiuscula, exacte ovata, acuta vel acuminata, ad 8 cm. longa, ad 3.25 cm. lata, 7-nervia : area media elliptico-oblongata : petiolus ad 7 cm. longus. *Florum maris* spicae ramis foliis carentibus ad 20 cm. longis coordinatae : axis angulatus, glaber, ad 2 cm. longus : alabastra supra basin latam subglobosa. *Sepala* ovata, obtusa, ad 1 mm. longa. *Petala* paullulo minora. *Flores foeminei* ignoti.

MALAYSIA. Borneo : ad fluminem Blooe, *Jaheri* ex Nieuwenhuis.

Typus in herbario Horti botanici Bogoriensis.

Dioscorea (Enantiophyllum) elegans Ridley MS. in Herb. Kew., nomen novum est pro *D. papuana* Ridley, nec Warburg.

Dioscorea (Enantiophyllum) platycarpa : species forte ad *D. Zollingerianam* Kunth, affinis : differt foliis exacte ovatis, mucronatis.

Partes inferiores ignotae. *Caules*, teste Koorders, ad 16 m. longi, nisi forsan basi armati inermes, ad nodos minutissime puberuli. *Folia* accurate ovata, opposita (? omnia), ad 8 cm. longa, ad 5 cm. lata, 5-nervia : area media late oblongata : nervi supra distincti, infra elevati, rufo-pubescentes : petiolus ad 2 cm. longus. *Flores maris* ignoti. *Capsulae* e pedicello 4 mm. longo abrupte expansae, apice truncatae : alae latiores quam semicirculares, ad 22 mm. longae, ad 21 mm. latae.

MALAYSIA. Java : Banjoewangi, in silvis Rogodjambi-Balak supra Ginting, Koorders 28901 b !

Typus in herbario Horti botanici Bogoriensis.

NOMINA RESORBENDA.

D. Bonnetii A. Chevalier in Bull. Econ. de l'Indo-chine, N.S. 20, (1918), p. 4, melius sub **D. cirrhosam** Lour. citanda : cum typo Loureiroano sat congruit.

D. borneensis R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 188, est **D. flabellifolia** nob.

D. Burkillii R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 143, est **D. kameronensis** Kunth.

- D. cirrhosa* insularum Philippinarum, sensu R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 288, est **D. Merrillii** nob.
- D. Clarkei* nob. in Journ. As. Soc. Bengal, N.S. 10, (1914), p. 15, est **D. Prazeri** nob.
- D. echinata*, R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 148, est **D. polyphylla** R. Knuth.
- D. Engleriana* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 140, est **D. kamoonsensis** Kunth.
- D. Fauriei* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 263, est **D. japonica** Thunb.
- D. Giraldii* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 315, est **D. nipponicae** Makino varietas.
- D. Harrissii* R. Knuth (Haniffii scribere debuit), in Engl. Pflanzenreich, IV-43, (1924), p. 352, est **D. Kingii**, R. Knuth.
- D. hongkongensis* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 288, est **D. Fordii** nob.
- D. Koordersii* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 292, est **D. myriantha** Kunth.
- D. latifolia* Benth. in Hook. Niger Flora, (1849), p. 535, est **D. bulbiferae** Linn. varietas.
- D. mengtzeana* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 142, est **D. kamoonsensis** Kunth.
- D. Morsei* nob. in Journ. As. Soc. Bengal, N.S.4, (1908), p. 454 est **D. hypoglauca** Palibin.
- D. myriantha* Merrill in Journ. Roy. As. Soc. Straits branch, parte peculiari (1919), p. 119, nec Kunth, est **D. Ridleyi** nob.
- D. neglecta* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 355, est **D. japonica** Thunb.
- D. nigrescens* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 253, est **D. Collettii** nob.
- D. Nurii* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 352, est **D. Kingii** R. Knuth.
- D. oenea* nob. in Journ. As. Soc. Bengal, N.S.10, (1914), p. 16, est **D. Collettii** nob.
- D. oppositifolia* Lour., Fl. Cochinch, (1790), p. 624, est **D. persimilis** nob.
- D. praecox* nob. in Journ. As. Soc. Bengal, N.S.4, (1908), p. 455, est **D. Hemsleyi** nob.
- D. siamensis* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 281, est **D. glabra** Roxb.
- D. sikkimensis* nob. in Journ. As. Soc. Bengal, 73, (1904), suppl. p. 3, est **D. Prazeri** nob.
- D. soror* nob., secundum cel. E. D. Merrill, est **D. divaricata** Blanco.
- D. subfusca* R. Knuth in Engl. Pflanzenreich, IV-43, (1924), p. 143, est **D. kamoonsensis** Kunth.
- Peripetasma polyanthum* Ridley in Journ. Bot. 1920, p. 147, est **D. stenomeriflora** nob.

XI.—NOTES ON CYPERACEAE: II.*

(New species etc. from Africa.)

W. B. TURRILL.

The majority of the species described in this paper have been received from Prof. Schonland, of the Albany Museum, Grahams-town, who has sent several hundred sheets of *Cyperaceae* to Kew during the past two years, either for identification or for confirmation of his determinations. Prof. Schonland has suggested several new species, and where I have been able to accept them I have adopted the name he has proposed. These cases are indicated by both our names appearing as joint authors. For the description of these, as well as of the other new species here enumerated, I, alone, am responsible. In addition to the above, several species in the Kew herbarium from other sources are also described.

***Pycereus lanceus* Turrill [comb. nov.].**

Cyperus lanceus Thunb. Prodr. Pl. Cap. 18 (1794) et Fl. Cap. 101 (1823). *Pycereus umbrosus* Nees in Linnaea x. 130 (1835-36); C. B. Clarke in Fl. Cap. VII, 158 (1897).

This new combination is rendered necessary by the Vienna Rules.

***Cyperus Mossii* Turrill sp. nov.;** ab *C. leptocladus* Kunth inflorescentiae ramis longioribus, glumis laxioribus acuminatis praecipue differt.

Herba perennis, glabra, caulibus usque ad 6 dm. altis (inflorescentia inclusa) 2 mm. diametro triangularibus longitudinaliter tenuiter striatis basi incrassatis. *Folia* linearia, usque ad 4 dm. longa vel longiora, 3 mm. lata, laevia vel margine minutissime serrulata, inferne in vaginam gradatim transientia. *Inflorescentia* umbellata, ramis primariis usque ad 1 dm. longis umbellis secundariis praeditis vel in spicula unica terminantibus; bracteae primariae 4-6, foliis subsimiles, inaequales, 2-3 inflorescentia longiores, reliquae breviores. *Spiculae* oblongae, complanatae, 5-6 mm. longae, 2.5-3 mm. latae, 8-10-florae. *Glumae* late ovato-ellipticae, 2 mm. longae, 1.25 mm. latae, apice breviter acuminatae, rufo-brunneae, dorso crasso-carinatae. *Stamina* 3, filamentis 2 mm. longis, antheris circiter 1-1.5 mm. longis apice apiculatis. *Nux* anguste ellipsoidea, 1.5 mm. longa, 0.5 mm. lata; stylus vix 0.5 mm. longus, ramis tribus 1.5 mm. longis praeditus.

TRANSVAAL: Witpoortje Falls, Witwatersrand, near Johannesburg, April 1918, *C. E. Moss* 218.

***Cyperus multiglumis* Turrill sp. nov.;** ab *C. semitrifido* Schrad. glumis in quaque spicula numerosioribus brevioribus recedit.

* Continued from *K. B.*, 1922, p. 124.

Herba annua, glabra, caulibus erectis usque ad 1.8 dm. altis gracilibus vix 1 mm. diametro longitudinaliter sulcato-costatis laevibus. *Folia* omnia basalia anguste linearia, lamina 4-5 cm. longa apice acuta margine serrulata, vagina 2-3 cm. longa integra viridi-straminea. *Inflorescentia* umbellata, spicis vel umbellis secundariis 3-7 sessilibus vel pedunculo usque ad 4 cm. longo suffultis instructa; bracteae primariae 2-3 foliis subsimiles, inaequales, usque ad 7 cm. longae sed saepissime breviores; spiculae 3-14 in quisque spicis vel umbellis secundariis aggregatae, lineares, 0.3-1.4 cm. longae, 2.5 mm. latae, glumis fertilibus circiter 40-50 in spiculis majoribus. *Glumae* late ovato-triangelares, apice acutae, 1.75 mm. longae, 1.25 mm. latae, dorso carinatae, nervis 7-8 praeditae, rubro-brunneae. *Stamina* 3, filamentis 2 mm. longis. *Nux* cylindrico-ovoidea, 0.6 mm. longa, 0.3 mm. diametro, castaneo-brunnea, apice orbiculo minimo persistenti instructa; stylus indivisus, stigmatibus inclusis 2.5 mm. longus.

TRANSVAAL: near Sandfontein, in damp localities, 1323 m., alt., 19 Jan. 1894, *Schlechter* 4251.

Cyperus nervoso-striatus *Turrill* sp. nov.; ab *C. Fenzeliano* Steud. spiculis patulis, glumis aureo-brunneis longitudinaliter nervoso-striatis recedit.

Herba perennis, glaber, caule erecto triangulari 6.7 dm. alto 3 mm. diametro tenuiter longitudinaliter striato. *Folia* omnia basalia imperfecta, usque ad 6 mm. lata, in vaginam gradatim transientia, laevia. *Inflorescentia* 1 dm. diametro, spicis 9 sessilibus vel pedunculis usque ad 6 cm. longis suffultis instructa; bracteae 4, inaequales, foliis similes sed minores. *Spiculae* 8-18-florae, lineares, complanatae, saepissime 1-1.3 cm. longae et 2 mm. latae. *Rhachis* alata. *Glumae* late ellipticae, 2.75 mm. longae, 2 mm. latae, apice rotundatae, longitudinaliter nervoso-striatae, carinatae, aureo-brunneae. *Stamina* 3, filamentis 2.75 mm. longis. *Nux* late obovoideo-trigona, 1.25 mm. lata, 1 mm. diametro, castaneo-brunnea, laevis; stylus 0.75 mm. longus, ramis tribus 3.25 mm. longis instructus.

TRANSVAAL: Ermelo District, Spioen Kop, Febr. 1910, *J. Burt Davy* 9237.

Cyperus tschinsendensis *Turrill* sp. nov.; ab *C. incompresso* C. B. Cl. glumis inferne marginem versus sanguineo-atris facile distinguitur.

Herba perennis, efoliata (?), glaber, caulibus erectis usque ad 3 dm. altis (inflorescentia exclusa) 2 mm. diametro longitudinaliter sulcato-costatis. *Folia* omnia basalia, fere ad vaginas 2-6 cm. longas sordide purpureo-virides reducta. *Inflorescentia* umbellata, spicis 4-7 sessilibus vel pedunculis ad 1 dm. longis suffultis instructa; bracteae primariae inaequales, lineares usque ad 1 dm. longae, 3 mm. latae, superne angustatae, margine saepe leviter serratae; spicae spiculis 6-11 aggregatis instructae vel fere umbellatae. *Spiculae* lineares vel elliptico-oblongae, com-

planatae, 0·8–2 cm. longae, 3–4 mm. latae; rhachis valde complanata, haud alata, 1–1·25 mm. lata. *Glumae* latissime ovatae, 3 mm. longae, 2·75 mm. latae, apice subobtusae, carinatae, pallide stramineae sed inferne marginem versus sanguineo-atrae. *Stamina* 2 (an semper?), filamentis 2·5 mm. longis. *Nux* obovoideo-trigona, 1·5 mm. alta, vix 1·25 mm. diametro, castaneo-brunnea; stylus ramis tribus inclusis 1 mm. longus.

CONGO: Tschinsenda, May 1914, *F. A. Rogers* 10786.

Mariscus angularis *Turrill* sp. nov.; ab *M. flavo* Vahl spiculis longioribus, nucibus semper 2–3 instructis differt.

Herba perennis, glaber, caule erecto 7·7 dm. alto (inflorescentia excluso) 2–2·5 mm. diametro triangulari longitudinaliter striato laevi. *Folia* omnia imperfecta, linearia, 5–6 mm. lata, laevia, inferne in vaginam clausam longam abrupte transientia. *Inflorescentia* spicis 10 sessilibus vel pedunculis usque ad 6 cm. longis suffultis instructa, 1–2 dm. diametro; bracteae primariae circiter 7, inaequales, saepe ramis longiores, foliis subsimiles, apice gradatim longeque attenuatae, margine minutissime serrulatae. *Spiculae* patulae, circiter 40–50, in spicis densis 1·5 cm. longis aggregatae, cylindrico-angulares, 5–8 mm. longae, floribus fertilibus 2 vel 3 praeditae. *Rhachis* alata, alis inclusis 2·5 mm. lata. *Gluma* 1, in spiculis inferioribus setacea, 3 mm. longa, in superioribus lanceolata, brevior; glumae 2 ovata, apice rotundata, fere 2 mm. longa; glumae floriferae late ellipticae, 4·25 mm. longae vel breviores, 2·5 mm. latae, apice obtusae, longitudinaliter nervosae, stramineae, dorso crassae, virides. *Stamen* 1 (an semper?), filamentum 4·25 mm. longo. *Nux* cylindrico-trigona, 2·5 mm. longa, 1 mm. diametro, brunnea; stylus ramis tribus inclusis 3 mm. longus.

CAPE PROVINCE: Port St. Johns, edge of sandhill bush, Jan. 1921, *S. Schonland* 3848.

Scirpus minutus *Turrill* sp. nov.; ab *S. cernuo* Vahl plantis minoribus tenuioribusque, glumarum apicibus elongatis plus minusve curvatis differt.

Herba annua, minuta, glabra, caulibus erectis vel ascendentibus circiter 3 cm. altis gracilibus. *Folia* omnia basalia; lamina angustissime linearia, apice acuta vel subacuminata, circiter 1·5 cm. longa; vagina clausa 3–4 mm. longa purpureo-sanguinea. *Spiculae* 1–2, terminales, ovoideae, 2–3 mm. longae, 1–2 mm. diametro; bractea suberecta vel patula foliis subsimilis, 0·2–1 cm. longa. *Glumae* late cymbiformes, valde carinatae, 1–1·5 mm. longae, circiter 1 mm. latae, dorso costa media viridi superne in acumen producta instructae. *Stamina* 3, filamentis 1 mm. longis, antheris oblongis circiter 0·3 mm. longis. *Nux* latissime obovoideo-trigona, ima basi abrupte angustata, 0·6 mm. longa, fere 0·5 mm. diametro, brunnea, laevis; stylus ramis tribus inclusis vix 1 mm. longus.

CAPE PROVINCE: near the River Ceres, common in moist soil in hollows in Table Mountain Sandstone, 26 Nov. 1908, *E. L. Stephens* 3530.

Ficinia dura *Turrill* sp. nov.; ab *F. gracile* foliis latioribus, glumis apice truncato-rotundatis distinguitur.

Herba perennis, glaber, in omnibus partibus duris, caulibus erectis usque ad 2·7 dm. altis vix 1 mm. diametro longitudinaliter striatis inferne vaginis veteris integris haud cancellatis vel fimbriatis obtectis. *Folia* omnia basalia, angustissime cylindrica, superne subplana, apice rotundata vel obtusissima, usque ad 1·5 dm. longa saepissime multo breviora, longitudinaliter unilateraliter sulcata. *Inflorescentia* capitata, spiculis 3–5 dense aggregatis lateraliter patulis; bracteae 2 inferne vaginatae, una erecta 1·3–3·2 cm. longa, altera declinata 5–9 mm. longa glumacea vel lamina brevi instructa et basi vaginata. *Spiculae* ovoideae vel ellipsoideae, 4–6 mm. longae, 2–3 mm. diametro. *Glumae* oblongae, apice truncato-rotundatae, 2·75 mm. longae, 1·75 mm. latae, carinatae, nervis lateralibus numerosis tenuissimis, viridi-purpureae. *Stamina* 3, filamentis 3·5 mm. longis, antheris linearibus 2·25 mm. longis. *Ovarium* angustissime ovoideo-trigonum, 1 mm. altum; stylus ramis tribus 2 mm. longis inclusis 3 mm. longus.

CAPE PROVINCE: Caledon Division, Stanford, 46 m. alt., 13 April, 1897, *Schlechter* 10430.

Bulbostylis Moggii *Schonland et Turrill* sp. nov.; ab *B. capillari* Kunth spiculis latioribus nucibus minoribus differt.

Herba annua, caulibus numerosis erectis gracilibus usque ad 1·7 dm. altis longitudinaliter albo-costatis glabris apicem versus leviter serrulatis. *Folia* omnia basalia, anguste linearia, apice acuta, usque ad 4·5 cm. longa, saepissime breviora, 0·25 mm. lata, serrulata, vaginis 1·4 cm. longis membranaceis pallide stramineis. *Inflorescentia* spiculis 3–5 caulis ejusque apice aggregatis praedita; bracteae 2–3, valde inaequales, foliis subsimiles sed brevioribus, 0·2–2 cm. longae. *Spiculae* oblongo-ovoidae, 3–5 mm. longae, fere 2·5 mm. latae, 1–3 sessiles, 1–2 pedunculis circiter 0·5 cm. longis suffultae. *Glumae* in quaque spicula circiter 20, late ovatae, carinatae, apice subobtusae vel inferiores acutae vel acuminatae, 1·3–1·5 mm. longae, glabrae, sanguineo-maculatae. *Stamina* 2 (an semper?). *Nux* late trigono-obovoidea, 0·5 mm. alta, alba, leviter transversali-rugulosa; stylus ramis tribus inclusis 1 mm. longus.

BECHUANALAND: Vryburg District, Armoed's Vlaakte, open veld and occasionally dry pans, 9 March, 1921, *A. O. D. Mogg* 8694a.

Bulbostylis stricta *Turrill* sp. nov.; ab *B. cinnamomea* [Boeck.] C. B. Cl. spiculis minoribus pedunculis 1–2 circiter 1 cm. longis instructis distinguitur.

Herba perennis, caespitosa, caulibus erectis strictis glabris longitudinaliter sulcatis usque ad 3-4 dm. altis cfoliatis. *Folia* omnia basalia, angustissime linearia, fere capillacea, apice acuminata, 6.5 cm. longa, 0.5 mm. lata, margine serrulata, vaginis membranaceis castaneo-brunneis circiter 3 mm. longis apice pilis longis albis paucis saepe instructis. *Inflorescentia* spiculis 1-4 caulibus apice aggregatis praedita; bracteae saepe 2, circiter 6-7 mm. longae, fere ad vaginam reductae, vel lamina foliis simili plus minusve evoluta, obscure ciliatae. *Spiculae* ellipsoideae 7 mm. longae, 4 mm. diametro, 1-2 sessiles, 1-2 pedunculis 0.4-1 cm. longis suffultae. *Glumae* late ellipticae, apice rotundatae, 3.25 mm. longae, 2 mm. latae, carinatae, margine apicem versus praecipue ciliatae. *Stamina* 3, filamentis 3.25 mm. longis. *Nux* late obovoideo-trigona, 1.25 mm. alta, vix 1 mm. diametro, pallide straminea, leviter transverse rugulosa.

RHODESIA: Salisbury District, 1538 m. alt., Nov. 19, *F. Eyles* 1890.

Fimbristylis triflora [L.] *K. Schum.* ex Engl. in Abh. Preuss. Akad. Wiss., 1894, 14 et in Pflanzenw. Ost-Afr. C., 124 [1895] var. ***capitata*** *Turrill* var. nov.; a planta vulgari spiculis omnibus sessilibus differt.

ZULULAND: Hamewith, Mtunzini, marsh fringe, 48m., Nov. 18, 1919, *A. O. D. Mogg* 5811 (original in Herb. Kew.), 5865.

The species was first described by Linnaeus as *Cyperus triflorus* in Mantissa altera 180 (1771), from König's collection "in India orientali." Vahl. in Enum. ii. 297 (1806) moved the species to *Abildgaardia* and gave it the trivial *tristachya*. Thwaites in Enum. Plant. Zeyl. 434 (1864) transferred the species to *Fimbristylis* retaining Vahl's trivial. He has been followed by C. B. Clarke in the Flora of British India vi. pt. 2, 649 (1893) and in the Flora of Tropical Africa viii. 424 (1902). Under the Vienna Rules, however, Schumann's combination has to stand.

The species occurs in the Deccan Peninsula and in Ceylon and in Tropical Africa in Togoland, Zanzibar, and Tanganyika to Portuguese East Africa. I know of no previous record in South Africa. All the Asiatic and Tropical African specimens at Kew have all except one or two of the spikelets on distinct, and often long, peduncles, but the nuts and glumes of the Zululand specimens can be well matched amongst those of the numerous specimens from farther north.

Fuirena Moiseri *Turrill* sp. nov.; ab *F. pubescenti* Kunth foliis angustioribus spiculis floribusque minoribus facile distinguitur.

Herba annua, caulibus erectis gracilibus usque ad 2.3 dm. altis vix 1 mm. diametro patente pubescentibus longitudinaliter striatis foliosis. *Folia* omnia caulina, breviter pubescentia, lamina lineari 6-8 cm. longa 3 mm. lata, vagina circiter 3 cm. longa clausa ore obliquo. *Inflorescentia* umbellis 2-5 praedita, usque ad 8 cm. longa. *Spiculae* in umbella quaque 5-20, ellipticae vel

elliptico-ovatae, 4–6 mm. longae, 2.5 mm. diametro, multiflorae. *Glumae* late ellipticae, apice mucrone 0.75 mm. longo instructae, 1.25 mm. longae (mucrone excluso), dorso puberulae. *Flores* hermaphroditi, setis vel perianthi segmentis nullis, staminis 1–2, filamentis 1.5 mm. longis, stylo vix 1 mm. longo, ramis stigmatosis tribus. *Nux* late obovoideo-trigona, 0.5 mm. alta.

NORTHERN NIGERIA, Fodama, 13 Dec. 1921, *B. Moiser*.

The complete absence of bristles or scales (representing a perianth) and the small nuts, considered together, distinguish this species from other African ones.

Tetraria compressa *Turrill* sp. nov.; ab *T. robusta* [Kunth] C. B. Cl. spiculis valde compressis longioribus, glumis floriferis longioribus angustioribus distinguitur.

Herba perennis, robusta, glabra. *Caulis* erectus, foliosus, 1.6 m. altus, internodis trigonis, nodis subteretibus, basi vaginis brunneis plus minusve nitentibus vel fibrosis crasse obtectus, inter fere ad basem et bracteam nodis 5 instructus. *Folia* basalia numerosa, lamina plana 9 dm. longa basi 1.5 cm. lata deinde gradatim angustata apicem versus longe gradatimque acuminata margine fere laevi, vagina circiter 6 cm. longa; caulina basalibus similia sed laminis angustioribus brevioribusque vaginis 5–6 cm. longis clausis artis ore obliquo. *Inflorescentia* spicato-paniculata, 6.3 dm. longa, ramis lateralibus valde complanatae spiculis numerosissimis instructa; bracteae inferiores foliis caulinis similes sed breviores, apicem versus gradatim reductae, inflorescentia breviores. *Spiculae* valde complanatae, 1.3–1.5 mm. longae, sessiles vel fere sessiles, agglomeratae. *Glumae* acuminatae vel acutissimae, infimae 4 vacuae, 4–10 mm. longae, floriferae 1.3 cm. longae. *Flos* inferior hermaphroditus sed ovario interdum infertile, setis angustissime linearibus 3 mm. longis margine minute serrulatis, staminis 3 filamentis 1.3 cm. longis, antheris 8 mm. longis longe mucronatis, ovario cylindrico 2.5 mm. longo 1 mm. diametro, stylo 1 cm. longo superne papilloso ramis stigmatosis tribus 9 mm. longis; flos superior flori inferiori similis sed ovario semper fertile instructus.

CAPE PROVINCE: Humannsdorp Division, Lower Zitzikamma flats near Kromme River, 152 m. alt., Feb. 1924, *Fourcade* 2600.

In this, as I suspect also in certain other species of *Tetraria*, the lower flower of the spikelet is sometimes functionally hermaphrodite ripening a nut, sometimes functionally male with the gynoeceum more or less reduced in size and degree of development. It is possible that the position of the spikelet on the lateral branches of the inflorescence may be correlated with the degree of functional development of the lower flower.

A specimen from Frames drift, Port Elizabeth, 23 Feb. 1911, *Mrs. T. V. Paterson* 1963, is probably this species, but the inflorescence only is represented, and this is somewhat more branched and luxuriant than that of the specimen described.

Tetraria Fourcadei *Turrill et Schonland* sp. nov. ; ab *T. ustulata* C. B. Cl. spiculis minoribus, glumis brevioribus minus conspicue acuminatis distinguitur.

Herba perennis, glabra. *Caules* erecti, graciles, basi incrassati ; inferne vaginis atro-brunneis haud nitentibus sed fimbriatis et cancellatis obtecti, teretes, usque ad 4 dm. alti, 1 mm. diametro, inter fere ad basem et bracteam infimam 1-vel 2- nodosi. *Folia* numerosa, lamina angustissime lineari apice acuminata usque ad 2.8 dm. alti 0.75 mm. diametro marginibus plus minusve incurvatis serrulatis, vagina in foliis caulinis 1-2 haud clausa soluta, in foliis basalibus fimbriatis cancellatisque. *Inflorescentia* spiculis in ramis lateralibus 2-4 aggregatis instructa ; bracteae infimae 4 cm. longae acumine longo incluso. *Spiculae* lanceolatae, complanatae, 9 mm. longae, sessiles vel pedunculo usque ad 3 mm. longo instructae. *Glumae* 5, infima praecipue acuminatae, 8-8.5 mm. longae. *Flores* hermaphroditi 2, in quoque flore staminis 3, filamentis 8.5 mm. longis, antheris linearibus valde acuminato-apiculatis, ovario cylindrico 1.25 mm. alto, stylo 6 mm. longo, ramis tribus.

CAPE PROVINCE : George Division, hills 4 miles east of Keurbooms River, Long Kloof, 1046 m. alt., Jan. 1923, *H. G. Fourcade* 2503.

The spikelets are too young to decide whether both or only one of the flowers will perfect a nut.

Tetraria Galpinii *Schonland et Turrill* sp. nov. ; ab *T. Dregeana* [Boeck.] C. B. Cl. inflorescentiis haud laxis, glumis acutissimis vel acuminatis recedit.

Herba perennis, caespitosa, glabra. *Caules* erecti, inferne vaginis atro-brunneis vel fere nigris saepe nitentibus haud fimbriatis vel cancellatis obtecti, teretes, graciles, usque ad 2.4 dm. alti, 0.5 mm. diametro, inter fere ad basem et bracteam haud nodosi. *Folia* basalia vel subbasalia, lamina angustissime lineari vix 0.5 diametro convoluta margine leviter serrulata, vagina (an semper ?) aperta. *Inflorescentia* spiculis 2-6 instructa, circiter 2 mm. longa (bracteis exclusis), compacta ; bracteae foliis similes sed haud vaginatae, acutae, primariae inflorescentiis multo longiores, usque ad 5.5 cm. longae. *Spiculae* 7-8 mm. longae, complanatae, sessiles vel pedunculo usque ad 4 mm. longo instructae. *Glumae* acutae vel acuminatae, infimae 4-5 vacuae, 2-4 mm. longae, floriferae 6.5-8 mm. longae. *Flos* inferior ♂ vel obsoletus ; superior hermaphroditus, staminis 2-3 filamentis 6 mm. longis, antheris 3.5 mm. longis apice mucronatis, ramis 3 stigmatosis circiter 7 mm. longis.

CAPE PROVINCE : Bongolo Nek, Queenstown, mountain top, 1525 m. alt., 24 Sept. 1911, *E. E. Galpin*.

Tetraria gracilis *Turrill* sp. nov. ; ab *T. Dregeana* C. B. Cl. spiculis glumisque brevioribus praecipue differt.

Herba perennis, caespitosa, glabra. *Caules* inferne vaginis purpureo-brunneis leviter nitentibus haud fimbriatis vel cancellatis

obtecti, subteretes, graciles, usque ad 5 dm. alti, 0.75 mm. diametro, inter fere ad basem et bracteam infimam haud nodosi. *Folia* basalia vel subbasalia, lamina vix evoluta angustissime linearia acuminata, usque ad 7 mm. longa, vagina usque ad 8 cm. longa purpureo-brunneo plus minusve nitente primo clausa arta deinde soluta. *Inflorescentia* spiculis 4-7 instructa, 4-5 mm. longa; bractea infima inflorescentia longior, acuminata, angustissime linearis. *Spiculae* oblongae, 3-5 mm. longae, pedunculo vix 1 usque ad 3 mm. suffultae. *Glumae* 4 inferiores vacuae; gluma 1 (infima) ovata, vix 1 mm. longa; gluma 2 late ovata, 2 mm. longa; gluma 3 late ovata, 3 mm. longa; gluma 4 lanceolato-ovata, 4 mm. longa; glumae 5 et 6 floriferae. *Flos* inferior hermaphroditus, staminibus 3, filamentis 6 mm. longis, antheris linearibus apice apiculatis 3 mm. longis; stylus ramis tribus.

CAPE PROVINCE: Uniondale division, south side of the Blaauw Bosch Pass, growing in tussocks, 677 m. alt., Nov. 1923, *H. G. Fourcade* 2816.

The spiklets are unfortunately too young for me to be sure whether both or only one of the two flowers will perfect a nut. Both have stamens and gynoecium, but I am not sure that the latter is always functional.

Tetraria maculata *Schonland et Turrill* sp. nov.; ab *T. fasciata* [Rottb.] C. B. Clarke foliis subcircinatis vel valde flexuosis, inflorescentiis simplicioribus, spiculis majoribus recedit.

Herba perennis, dense caespitosa, glabra. *Caules* inferne vaginis atro-brunneis vel fere nigris saepe nitentibus conspicue cancellatis vel fimbriatis obtecti, teretes, graciles, usque ad 4.7 dm. alti sed saepissime multo breviores, 0.5-1 mm. diametro, inter fere ad basem et bracteam 1-2 nodis instructi vel haud nodosi. *Folia* subbasalia numerosa, lamina angustissime lineari apicem versus gradatim angustata usque ad 2 dm. longa 0.5-1 mm. lata saepe flexuosa vel subcircinali plana vel subconvoluta margine minutissime serrulata vel laevi, vagina primo clausa. *Inflorescentia* spiculis 1-4 instructa, circiter 8 mm. longa; bractea angustissime lineares, acuminatae, inferne in vaginam nigram apertam 1-2.5 cm. longam margine membranacea maculata transientes, inflorescentia plus minusve longiores. *Spiculae* 7-8 mm. longae, vix complanatae, sessiles vel pedunculo 1-5 mm. longo instructae. *Glumae* acutae vel acuminatae, infimae 4-5 vacuae, 3-6 mm. longae, floriferae 7-8 mm. longae, omnes atosanguineo-maculatae. *Flos* inferior ♂ vel (?) obsoletus; superior hermaphroditus, filamentis tribus 7-9 mm. longis, ovario vel nuce immatura obconico-cylindrico 3 mm. alto 1 mm. diametro, stylo 4 mm. longo, ramis stigmatosis tribus 5 mm. longis.

CAPE PROVINCE: Konde Bokkeveld, 1220 m. alt., 5 Sept. 1896, *Schlechter* 8851; Konde Bokkeveld Gydow, 1380 m. alt., 17 Jan. 1897, *Schlechter* 10003 (nomenclatural "type").

The quoted specimens of this species show stages in the reduction of the inflorescence. The one or two internodes sometimes

present between the basal internodes and the first functioning bract probably represent the lowest nodes of the inflorescence, the apparent leaves being bracts and the inflorescence branches suppressed.

Tetraria pubescens *Schonland et Turrill* sp. nov.; ab *T. circinale* [Schrud.] C. B. Cl. inflorescentiis valde reductis glumis paucioribus differt.

Herba perennis, dense caespitosa, glabra. *Caules* inferne vaginis atro-brunneis haud vel vix nitentibus integris vel leviter fimbriatis et cancellatis obtecti, subteretes vel fere trigoni 3–8 cm. alti, 0.75 mm. diametro, inter fere ad basem et bracteam haud nodosi. *Folia* basalia vel subbasalia, lamina angustissime lineari plus minusve flexuosa vel circinali apice gradatim acuminata usque ad 12 cm. sed saepissime 7–10 cm. longa 0.5 mm. lata subplana margine leviter serrulata, vagina mox aperta. *Inflorescentia* spiculis 1–3 instructa, circiter 1.5 cm. longa (bracteis exclusis); bracteae foliis similes, primariae inflorescentia longiores. *Spiculae* 6–8 mm. longae, haud complanatae, sessiles vel pedunculo usque ad 2 mm. longo instructae. *Glumae* acutae, infimae 4–5 vacuae, 3–5 mm. longae, floriferae 5–5.5 mm. longae. *Flos* inferior ♂ vel obsoletus; superior hermaphroditus, filamentis 5.5 mm. longis, nuce obovoideo-cylindrica 2.5 mm. alta 1.5 mm. diametro, stylo 2.5 mm. longo, ramis stigmatosis tribus.

CAPE PROVINCE: Bainskloof, 610 m. alt., 5 Feb. 1897, *Schlechter* 10250.

Tetraria Schonlandii *Turrill* sp. nov.; ab *T. Bolusii* C. B. Cl. inflorescentia compacta, spiculis majoribus, a *T. Dregeana* [Boeck.] C. B. Cl. laminis evolutis, spiculis latioribus glumis supremis supra inferioribus vix conspicue exsertis distinguitur.

Herba perennis, dense caespitosa, glabra. *Caules* inferne vaginis atro-brunneis saepissime nitentibus haud fimbriatis vel cancellatis obtecti, teretes, graciles, usque ad 3.5 dm. alti, 0.75 mm. diametro, inter fere ad basem et bracteam haud nodosi. *Folia* basalia vel subbasalia, lamina angustissime lineari apice acuta usque ad 8 mm. longa sed saepe breviora 0.5 mm. lata subplana margine leviter serrulata, vagina clausa arta. *Inflorescentia* spiculis 1–5 instructa, circiter 1–2 cm. longa; bracteae foliis similes sed haud vaginatae, saepissime inflorescentia longiores. *Spiculae* 7–8 mm. longae, complanatae, sessiles vel pedunculo usque ad 2 mm. longo instructae. *Glumae* acutae, infimae 6–7 vacuae, 2–5 mm. longae, floriferae 6 mm. longae. *Flos* inferior hermaphroditus sed ovario probabiliter infertile, superior hermaphroditus, staminibus 3, filamentis 4 mm. longis, ovario obovoideo 1 mm. alto 0.75 mm. diametro leviter complanato, stylo 4 mm. longo, ramis 2–3 stigmatosis circiter 4 mm. longis.

CAPE PROVINCE: Zuurborg, dry slopes near Sanatorium Common, c. 650 m. alt., 19 April 1919, *S. Schonland* 3172.

Tetraria vaginata *Schonland et Turrill* sp. nov. ; ab *T. circinali* [Schrader] C. B. Cl. foliis valde circinatis, inflorescentiis reductis, spiculis majoribus et bracteis et glumis infimis vaginatis in laminam linearis productis facile distinguitur.

Herba perennis, dense caespitosa, glabra. *Caules* inferne vaginis brunneis vel atro-brunneis haud vel vix nitentibus haud vel leviter fimbriatis vel cancellatis obtecti, teretes, usque ad 1.5 dm. alti, 1 mm. diametro, inter fere ad basem et bracteam uninodosi vel haud nodosi. *Folia* saepissime basalia vel subbasalia, lamina angustissime lineari plana vel leviter convoluta flexuosa, vel plus minusve circinali saepe circiter 1.0 dm. longa 1.25 mm. lata, apice gradatim acuminata margine leviter serrulata, vagina primo clausa sed mox aperta. *Inflorescentia* spiculis 1-4 instructa circiter 2-5.5 cm longa; bractee foliis similes, conspicue vaginantes, primariae inflorescentia multo longiores. *Spiculae* 1 cm. longae, haud vel vix complanatae, sessiles vel breviter pedunculatae. *Glumae* acutae vel acuminatae, infimae 2-3 vacuae, 5-6 mm. longae, floriferae 5-7 mm. longae. *Flos* inferior hermaphroditus sed ovario infertile; superior hermaphroditus, setis circiter 6 linearibus 1.5-2 mm. longis margine fimbriatis, staminibus 3, filamentis 6.5 mm. longis, nuce ellipsoidea 3 mm. longa 0.5 mm. diametro superne hispidula, stylo 3 mm. longo, ramis stigmatosis 3.

CAPE PROVINCE : Konde Bokkeveld, 1220 m. alt., *Schlechter* 8886.

XII.—PLANTS FROM BENCOOLEN, SUMATRA.

Collected by Mr. C. J. BROOKS.

H. N. RIDLEY.

The flora of Sumatra is as yet very little known in spite of its comparatively easy accessibility. After the times of Miquel and Korthals very little collecting was done there until the last few years, except by Beccari, who made a good collection in the Padang district and Mount Singalan, many specimens of which are still undescribed. Most recently however, we have had an account of the fine collections from Korinche made by Robinson and Kloss, an account of the plants collected by Forbes is being published by the Staff of the British Museum (Natural History), the account of the plants collected by myself, and by Mr. Burkill's collectors in the Battak country, has recently been published and now Mr. C. J. Brooks sends a small, but very interesting collection from Bencoolen on the west coast of Sumatra. This collection is specially interesting because it is made in the district which Jack explored for plants in 1820 to 1822, and which he described in the Malay Miscellanies. Unfortunately as is well known, the whole collection that he made here perished in the "Fame" catastrophe, and since his time no one seems to have collected plants in Bencoolen district.

MAGNOLIACEAE

Talaruma mutabilis Bl.

Bencoolen. No label.

CAPPARIDACEAE

Capparis Finlaysoniana Wall.

Lubok Tandai, at 700 ft., flowers white, straggling shrub, 7614.

FLACOURTIACEAE

Ryparosa caesia Bl.

Bencoolen. No label.

VIOLACEAE

***Neckia grandifolia* Ridl.** n. sp. ; species alta, foliis latis oblanceolatis ab omnibus speciebus valde distincta.

Suffrutex cauli lignoso ultra 30 cm. longos, 7 mm. crasso fasciculis bractearum dense tecto ; foliis praesertim ad apicem congestis, tenuiter coriaceis, oblanceolatis apicibus acuminatis, basibus in petiolis longe attenuatis, marginibus serrulatis, costa utrinque elevata, nervis copiosis horizontalibus, 18-19 cm. longis, 5 cm. latis, glabris, petiolis dilatatis 7 mm. longis ; floribus infra folia plurima, in fasciculis bractearum 8 mm. latis, bracteis siccis subulatis, pedicellis gracilibus 3 cm. longis, bracteolis 2-3 linearibus angustissimis 3 mm. longis, dissitis, sepalis 5 lanceolatis acuminatis acutis, marginibus parce denticulatis, 1 cm. longis, tribus exterioribus quam 2 interioribus, petalis lanceolatis obtusis 5 mm. longis, staminibus 5 connatis in tubo, staminodiis basalibus copiosis, filiformibus apicibus minute capitatis, tubo brevioribus, superioribus e margine tubi 10 linearibus obtusis carnosus, ovario conico, stylo cylindrico, stigmate capitato.

Lubok Tandai, at 1000 ft., flowers pale green, 7605.

This is one of the biggest species of the genus and remarkable for the large, broad, oblanceolate leaves.

POLYGALACEAE

Polygala pulchra Hassk.

Lubok Tandai, shrub in old jungle, 7107.

Polygala venenosa Bl.

Lubok Tandai, flowers purple and white, 7921.

Xanthophyllum cordatum Korth.

Lubok Tandai, shrub in jungle shade, flowers yellow with violet streaks, 8276.

***Xanthophyllum flavum* Ridl.** n. sp. ; affinis *X. rufo* Benn. sed foliis tenuioribus longioribus petalisque longis angustatis.

Arbor parva ramulis gracilibus pubescentibus ; foliis oblanceolatis cuspidatis superne glabris, subtus glaucescentibus, costa elevata, nervis 10-12-paribus elevatis, cum nervulis hirtulis, 18 cm. longis, 8 cm. latis, petiolis crassis pubescentibus 1.5 cm. longis ; racemis axillaribus 4 cm. longis rufro-hirtis paucifloris ; floribus 4-5, flavis 1 cm. longis, pedicellis 4 mm. longis, rufo-

hirtis, *bracteis* 2 mm. longis hirtis, *sepalis* 2 exterioribus oblongo-ovatis rufo-hirtis 5 mm. longis, interioribus majoribus lanceolato-ovatis obtusis carinatis, rufo-hirtis marginibus scariosis 6 mm. longis, *petalis* 4 oblongo-lanceolatis angustis obtusis, carina cymbiformi dorso rufo-hirto, cum linea rufo-hirta in interiore, *staminibus* 8, filamentis cylindricis ad bases dilatatis et ad petala adnatis, antheris parvis terminalibus, *stylo* hirto, *ovario* ovoideo, lineis 4 hirtis exceptis, breviter stipitato in disco annulari margine incrassato.

Lubok Tandai, small tree in undergrowth, flowers yellow, 7368.

Allied to *X. rufa* Benn., but the leaves are thinner and longer and the petals very narrow.

TERNSTROEMACEAE

Saurauja singalanensis Korth.

Lubok Tandai, in old jungle, low shrub, flowers white, 7188.

MALVACEAE

Bombax Valetonii Hochr.

Lubok Tandai, large tree, flowers cream-white or green, 7096.

STERCULIACEAE

Sterculia subpeltata Bl.

Lubok Tandai, a shrub in shade, 7098.

Only previously recorded from Java.

BALSAMINACEAE

Impatiens tricolor Ridl. n. sp.; species affinis *I. eubotryae* Miq. sed herba racemosa, alternifolia, labello cucullato, calcare longo tenui, floribus multo majoribus.

Herba glabra ultra 15 cm. longa; *foliis* alternis ovato-lanceolatis breviter acuminatis basi angustatis marginibus integris, glandulis columnaribus, 1 mm. longis etiam in petiolis exceptis, subtus albescentibus, nervis 7-10-paribus, 6-14 cm. longis, 3.5-6 cm. latis, *petiolis* 1-3 cm. longis; *floribus* 2-5 in racemis erectis 7 cm. longis extra-axillaribus, *bracteis* foliaceis ovato-oblongis 5 mm. longis, *pedicellis* 1 cm. longis gracilibus, *sepalis* ovatis latis mucronulatis, 1 cm. longis, *vexillo* late ovato 1.5 cm. longo et lato, processu parvo in marginibus utrinque, *alis* brevioribus semioblongis, *labello* breviusculo, infundibuliformi late ad basin in calcare 2 cm. longo gracili producto, *staminibus* filamentis linearibus congestis, antheris 6 connatis.

Lubok Tandai, herb, common by water in clearings, 7187.

A rough pencil sketch gives lip spur and alae yellow blotched with red or crimson, the rest white.

RUTACEAE

Glycosmis rubiginosus Ridl. n. sp.; differt ab aliis specibus in foliis lanceolatis tenuibus et indumento rufo-furfuraceo.

Frutex rubiginoso-furfuraceus; *foliis* herbaceis unifoliatis lanceolatis acuminatis basibus angustatis furfuraceo-rubiginosis, nervis 5-paribus inter se arcuantibus, 9-10 cm. longis, 2-3 cm.

latis, *petiolis* 5 mm. longis; *panicula* 4 cm. longa rufo-furfuracea, multi-ramosa, *bracteis* ovatis acutis 1 mm. longis; *floribus* parvis sessilibus, *sepalis* obovatis apicibus rotundatis furfuraceis, *petalis* 4, oblongis unguiculatis, *staminibus* filamentis complanatis, basibus et apicibus angustatis medio dilatatis, antheris terminalibus introrsis oblongis, connectivo latiusculo, minute ad apices appendiculatis, *ovario* conico, *stylo* crasso brevi, *stigmatе* capitato.

Lubok Tandai, 7167.

Very distinct in its thin lanceolate leaves, and in the red scurfy indumentum covering the branchlets, leaves, especially the midrib and nerves on the back, and the panicle. It is possible that this is a young shoot only, and the fully adult leaves may be more coriaceous, but I have seen nothing really like this plant.

OCHNACEAE

Gomphia sumatrana Jack.

Lubok Tandai, small tree at 1000 ft., 7599.

This is the large-leaved plant described by Jack from Sumatra, Mal. Misc. i. 29, the leaves being 15 cm. long, 8.5 cm. wide, elliptic, thin in texture with the intramarginal nerves very conspicuous; the panicle 18 cm. wide of a few spreading branches; the flower pedicels slender, 2 cm. long. Specimens quite similar occur in the Kew herbarium collected in Sumatra by Marsden. The Malay peninsula plant commonly known as *G. sumatrana* Jack, and so named by Wallich, Cat. 2803, from Singapore and the Dindings, differs in the thick textured oblong leaves often (but not always) entire on the upper part of the edge, 5 to 13 cm. long, 3 to 4 cm. wide. The sepals in fruit in Jack's plant are lanceolate-acuminate, 1 cm. long, longer than the fruit, those of the Malay peninsula plant ovate-lanceolate subacute or blunt, 1.2 cm. long, in some specimens actually ovate, and the panicle is dense, and much shorter. I think it would be advisable to separate the two species, giving the Malay peninsula one the name of *G. oblongifolia*.

BURSERACEAE

Santiria brachystachys Ridl. n. sp.; affinis *S. apiculatae* Benn., sed undique pubescens folisque latioribus ovato-ellipticis, paniculis brevioribus.

Arbor magna, ramis cortici pallido, breviter hirtis; *foliis* trifoliatis, 18 cm. longis, foliolis ovato-ellipticis cuspidatis basibus breviter angustatis, subcoriaceis, nervis 8-paribus subtus elevatis, pubescentibus 7-14 cm. longis, 4-7 cm. latis, terminali majore quam lateralibus, petioulis lateralibus 1 cm. longis terminalibus 4 cm. longis, *petiolis* 6 cm. longis; *paniculis* axillaribus, 6 cm. longis laxis pubescentibus ramis 0.6-1 cm. longis; *floribus* viridibus, pedicellis brevissimis, pubescentibus, *calyce* explanato pubescente apicibus 3-subacutis, *petalis* 3 ovatis patentibus, *staminibus* 6 brevibus, *ovario* in disco crasso immerso, *stylo* brevi, *stigmatе* trilobo.

Lubok Tandai, at 800 ft., a large tree, flowers green, 7929.

MELIACEAE

Dysoxylon ramiflorum Miq.

Lubok Tandai, at 800 ft., a large tree, flowers white low down on the trunk, 7928.

CELASTRACEAE

Perrottetia alpestris Loes.

Lubok Tandai, shrub in secondary growth, 7182.

AMPELIDEAE

Pterisanthes polita Miq.

Lubok Tandai, 9239.

Pterisanthes cissoides Bl.

Lubok Tandai at 900 ft., 7903.

There are no leaves on the specimen, but I think it is this species.

SAPINDACEAE

Allophyllus javensis Bl.

Lubok Tandai, small tree, calyx white to green, 7097.

LEGUMINOSAE

Bauhinia Wrayi Prain var. **sumatrana** Ridl. n. var.; omnino similis *B. Wrayi* peninsulae Malayanae sed foliis ovato-lanceolatis acutis, nervis subtus in adultis rufo-pubescentibus ramulisque pubescentibus.

Lubok Tandai, at 1400 ft., secondary growth in clearing, flowers light green, 7172.

Pithecolobium bigeminum Mart.

Lubok Tandai, at 1200 ft., small shrub in shady undergrowth, flowers white, 7175.

MYRTACEAE

Eugenia densiflora DC. var.

Lubok Tandai, a large tree on rocks by river, flowers white, 8272.

I found a form of this tree very similar to this one on the banks of the Kelantan river, Malay peninsula. The typical lowland plant of swampy forests is a large tree with much broader leaves.

Eugenia biniflora Ridl. n. sp.; *E. pauperi* Ridl. affinis, nervis pluribus horizontalibus, floribus binis in axillis differt.

Arbor parva, glabra; *foliis* lanceolato-ellipticis acuminatis cuspidatis basi longe attenuatis subcoriaceis, nervis horizontalibus parallelis, 30 paribus, costa superne depressa subtus elevata 12.5–15 cm. longis, 4.5–5 cm. latis, petiolis 1 cm. longis; *cymis* paucifloris binis in axillis foliorum superiorum vel subterminalibus, *pedunculis* 5 mm. longis, *bracteis* ovatis acutis persistentibus patentibus 2 mm. longis; *floribus* 1 vel 2 in cymis, *calyce* obconico 4 mm. longo, lobis brevibus rotundato-ovatis, *petalis* calyptratis, *staminibus* brevibus ad 20.

Lubok Tandai, a small tree in undergrowth of old jungle, 7103.

Remarkable for the numerous parallel nerves, and the very few flowers, one or two only on each of the axillary peduncles.

MELASTOMACEAE

Melastoma molle Wall.

Lubok Tandai, flowers pink, 6683.

Melastoma imbricatum Wall.

Lubok Tandai, at 1000 ft., a large shrub in deep shade, flowers red pink, 7927.

Melastoma velutinosum Ridl. n. sp. ; *M. lanaensi* Merrill affinis, differt in foliis omnino velutinis, et calyce piloso.

Frutex ramis dense molliter hirsutis ; *foliis* coriaceis superne dense velutino-hirtis, subtus parcius hirtis, nervis 5 densius et longius hirtis, ovatis vel oblongo-ovatis acutis, basibus rotundatis vel breviter angustatis, marginibus serratis, 4.5–8 cm. longis, 2–3 cm. latis, *petiolis* 4 mm. longis dense hirtis ; *floribus* 2–3 in axillis terminalibus, *bracteis* linearibus dense hirtis, *pedicellis* 4 mm. longis, *calyce* ovoideo-globoso pilis longiusculis dense tecto, lobis linearibus hirtis 5 mm. longis, *petalis* roseis obovatis unguiculatis 9 mm. longis et aequae latis, apicibus parce hirtis, *staminibus* majoribus, filamentis 4 mm. longis, antheris linearibus curvis acuminatis basibus obtusis connectivis elongatis, minoribus subsessilibus exappendiculatis paullo latoribus flavis.

Lubok Tandai, at 1400 ft., in secondary growth on clearings, flowers pink, 7176.

Allomorphia malaccensis Ridl.

Lubok Tandai, in old jungle, flowers white, 7184.

Anerincleistus hirsutus Korth.

Lubok Tandai, a bushy shrub in old jungle, flowers pale violet, 7177.

Sonerila moluccana Roxb. var. *pilosiuscula* Bl.

Lubok Tandai, in shade, flowers pink, 7191.

The Sumatran form of this plant is less hairy than the Malay peninsula form.

Phyllagathis rotundifolia Bl.

Lubok Tandai, at 900 ft., in light shade, flowers pink, 7617.

Pomatostoma cirrhiferum Ridl. n. sp. ; differt aliis specibus in cymis lateralibus gracilibus, staminibus brevibus, antheris seta longa e basi dorsali.

Suffrutex haud ramosus, caule validulo ultra 20 cm. longo ; *foliis* alternis sessilibus semiamplexicaulibus lanceolatis acuminatis acutis, glabris subtus pallidioribus, nervis 5, nervulis horizontalibus ad 50, marginibus dentatis setulosis, 20 cm. longis, 5.5 cm. latis ; *floribus* in cymis 2–5, pedicellis filiformibus infra foliis ortis 2 cm. longis, *bracteis* linearibus acutis 1 mm. longis, *calyce* obovoideo 2 mm. longo, lobis 4 linearibus aequilongis, *petalis* 4 lanceolatis acutis tenuibus 1.5 cm. longis, *staminibus* 8 similibus, filamentis brevibus 3 mm. latis, antheris linearibus curvis 5 mm. longis, seta e basi dorsali antheram aequilonga,

stilo gracili, corolla multo brevior, *capsula* obovoideo-globosa, lobis calycis persistentibus cum carinis ad basin, *seminibus* minutis obcuneatis apice lateraliter producto.

Lubok Tandai, at 900 ft., herb, in shady jungle, flowers light purple, the underside of the leaf carmine, 7166.

This remarkable species differs much from the typical *Pomatostoma* Stapf. e.g. *P. sertuliferum*, in the inflorescences being produced below the leaves, the very thin petals which appear not to spread, and the short stamens with a bristle from the back of the base of the anther as long as the anther. The fruit seems to be similar to that of the typical species, but I am not certain as to how it actually opens. The seeds exactly resemble those of *P. sertuliferum* Stapf.

Pachycentria tuberculata Korth.

Lubok Tandai, a massive epiphyte on a tall tree, flowers pink, 7921.

Medinilla alternifolia Bl.

Lubok Tandai, at 800 ft., creeping from the ground upon trunks, flower pink, 7926.

Marumia rhodocarpa Cogn.

Lubok Tandai, at 900 ft., a straggling shrub, flowers white and pink, 7922.

Dissochaeta celebica Bl.

Lubok Tandai, common, 6675.

Dissochaeta pallens Bl.

Bencoolen. No label.

Dactyliota setigera Bl.

Toko Rottan, in deep shade, a fair sized bush, flowers entirely white, no number.

The three species of this genus, *D. setigera* Bl., *D. bracteata* Bl., *D. luzonensis* (*Medinilla luzonensis* Hook. fil.) have been referred to the genus *Medinilla* by several authors including Cogniaux, from which they appear to me very distinct, and I therefore restore the old genus *Dactyliota* Bl. for them. *D. setigera* Bl. from the fine aerial roots on the lower part of one of the specimens appears to be epiphytic and climbing on trees. The flowers do not appear ever to have been described. They seem to be very fugacious. The bracts which are white in this species (rose-pink in *D. bracteata*) are obovate and covered with stellate hair, the calyx subglobose covered with long hairs, and with a rather deep elevated edge with five short points, petals 4, obovate spathulate rounded at tip, 1 cm. long; stamens 8, filaments rather short, anthers curved, base prolonged bilobed with a short process at the back.

Kibessa azurea Bl.

Lubok Tandai, a large shrub, flowers pale mauve, 7598.

BEGONIACEAE

Begonia isoptera Dryand.

Lubok Tandai, at 700 ft., common, flowers white, 7609.

Begonia stictopoda Miq.

Bencoolen. No label.

This appears to be widely spread over Sumatra. It is possibly the *B. caespitosa* Jack, described in the Malay Miscellanees from Bencoolen.

Begonia tenericaulis Ridl. n. sp.; affinis *B. isopterae* Dryand, foliis ovatis integribus differt.

Caulescens glabra, caulibus gracilibus; foliis oblique ovatis acute acuminatis basibus emarginatis, marginibus subintegris, dentibus perpauca praesertim in juvenibus, nervis 6-paribus, 13 cm. longis, 6 cm. latis; cymis gracillimis axillaribus 15–20 cm. longis superne biramosis; floribus masculis in ramo superiore 6 cm. longo, in cymula brevi 6, pedicellis gracilibus 4 mm. longis, sepalis 2 obovatis, rotundatis 3 mm. longis multi-venosis, petalis 2 aequilongis linearibus oblongis, staminibus antheris subsessilibus clavatis; floribus femineis 2 in apice ramo inferiore brevior 3.5 cm. longo, sepalis 2 oblongis angustis 5 mm. longis, petalis subsimilibus, capsula oblonga tripartita, alis angustis aequalibus, 1.5 cm. longa, 7 mm. lata.

Lubok Tandai, at 700 ft., flowers white, 7608.

RUBIACEAE

Hedyotis capitellata Wall.

Lubok Tandai, at 700 ft., flowers white, 7363.

Hedyotis congesta R. Br.

Lubok Tandai, a straggling shrub in old jungle, flowers small white, 7173.

Argostemma involucrata Hemsl. var. **sumatrana** Ridl. n. var.; differt foliis superne pustulatis nec hirtis, nervis subtus prominentibus hirtis, inflorescentia omnino glabra.

Lubok Tandai, in shady jungle, flowers white, 7190.

This form resembles the hairy form of *A. involucrata* except that whereas in that the upper surface of the leaves is covered with close-set pustular-based hairs, this has only the pustules; the nerves on the under side are strongly elevate, and unlike all forms, the inflorescence is completely glabrous.

Ixora Lobbii Loud.

Lubok Tandai, at 1000 ft., in undergrowth in old jungle, flowers scarlet, 7174.

The narrow-leaved form. The species is common in the Malay peninsula and Java.

Lasianthus flavicans King & Gamble.

Lubok Tandai, 7171.

A rather glabrous form, the flowers being quite glabrous.

Cephaelis Griffithii Hook. fil. var.

Lubok Tandai, at 1200 ft., in shade, 7170.

This variety has three heads of flowers on the peduncle instead of one large one. I obtained a similar specimen at Ulu Gombak in Selangor. A new record for Sumatra.

CAMPANULACEAE

Pentaphragma Scortechinii King & Gamble.

Lubok Tandai, at 1000 ft., in light shade, flowers pale green, 7607.

Large plants with as many as eleven cymes. They differ from the Malay peninsula plant only in having the corolla lobes hairy at the tips. A new record for Sumatra.

Vaccinium acuminatum Miq.

Lubok Tandai, 736.

Uncaria ovata Br.

Lubok Tandai, in secondary forest, 7105.

The leaves are 8-nerved, and at the nerve axils are small hair-tufts probably domatia of acarids.

Ophiorrhiza exserta Ridl.

Lubok Tandai, flowers pink with dull red exterior, no number.

Coptophyllum capitatum Miq.

Bencoolen. No specific locality or number.

Lucinaea membranacea King.

Bencoolen. No specific locality or number.

New record for Sumatra.

Lerchea longicauda Bl.

Lubok Tandai, at 600 ft., a common herb, 6670, 7611.

Psilobium nutans Jack.

Lubok Tandai, herb, in shade, common, flowers white green, 6681.

I take this to be the long-lost *Psilobium* of Jack, obtained at Bencoolen. It agrees in almost all points with his description, but the calyx-lobes are described by him as "very large" which though they are fair size, hardly agrees with this.

Psychotria robusta Bl.

Bencoolen, flowers green, stamens pale violet, no number.

Psychotria rostrata Bl.

Lubok Tandai, herb, in shade, flowers white, 7925.

Chasalia curviflora Thw.

Lubok Tandai, at 900 ft., flowers white, 7613.

MYRSINACEAE

Ardisia speciosa Bl.

Lubok Tandai, shrub, flowers pink, 7616.

Ardisia pterocaulis Miq.

Lubok Tandai, a small tree in old jungle, 7180.

Ardisia odontophylla Wall. var. *Lobbii* Hooker.

Lubok Tandai, herb, in the shade, flowers pale purple, 7186.

A small form only 15 cm. tall.

APOCYNACEAE

Lyonsia sumatrana Ridl. n. sp.; species *L. celebicae* Oliv. affinis sed glabra, tubo corollae brevi, lobis elongatis.

Scandens fruticosa; *foliis* oppositis subherbaceis glabris in sicco superne olivaceo-viridibus subtus flavescentibus, ellip-

ticis acuminatis basibus cuneatis, inferioribus saepe ovatis majoribus, nervis 5-paribus subtus alatis, 10 cm. longis, 3 cm. latis, inferioribus 12-14 cm. longis, 5-8 cm. latis, *petiolis* 2-4 cm. longis; *cymis* terminalibus, 5 cm. longis, ramis 5, ramulis 2 in utroque, *pedunculis* 5 cm. longis omnino furfuraceis; *floribus* pluribus, *pedicellis* 2 mm. longis, *bracteis* lanceolatis acutis brevioribus, *calyce* campanulato pubescente, lobis brevibus 5 ovatis acutis, *corollae* tubo brevi 3 mm. longo subglobo, calycem vix superante lobis 5 lanceolatis valvatis, demum reflexis patentibus 3 mm. longis, *staminibus* 5 exsertis conniventibus petalis aequilongis, filamentis filiformibus in ore tubo corollae adnatis, antheris lanceolatis basi bifidis, *pistillo* conico, *stylo* gracili, *stigmatibus* dilato cylindrico, cum annulo disco infero, lobis 5 oblongis obtusis circum pistillum conicum, *follicula* lanceolata acuminata 20 cm. longa 1.5 cm. lata, *seminibus* (vix maturis) elongatis 2 cm. longis, coma 5 mm. longa.

Lubok Tandai, scandent in secondary forest, the food plant of the larvae of *Hestia lynceus*, 7100, 7104.

The genus *Lyonsia* has hitherto been recorded from Australia, several species, Papua, New Caledonia, Fiji and Celebes; another species undescribed from Borneo occurs in Haviland's collections, but it has never been previously met with so far west as Sumatra. The species seems most clearly allied to *L. celebica*. It is not hairy as in that species, but the inflorescence is pubescent scurfy, the branches of the plant are woody and strongly lenticellate.

ASCLEPIADACEAE

Pentanura sumatrana Bl.

Tambang Lawah, Moesa amam, flowers grey-green outside, purple inside, back of leaf mottled purple, no number. *Asclepias curassavica* Linn.

Redjang Lelong, flowers orange and yellow, no number.

Hoya coronaria Bl.

Tambang Sawah, Asi Putih, by a hot spring, flowers dull white with crimson lake spots irregularly placed especially at back, no number.

Hoya Brooksii Ridl. n. sp.; affinis *H. polystachyae* Bl., sed foliis multo minoribus et pedicellis multo longioribus.

Caulis gracillimus; *foliis* carnosis ellipticis subacutis basibus cuneatis, nervis invisis, costa etiam obscura, 5 cm. longis, 2 cm. latis, *petiolis* crassis 5 mm. longis; *pedunculis* subvalidis 3 cm. longis, *pedicellis* filiformibus, *racemo* brevi 5 mm. longo; *floribus* fuscis 5 mm. latis, *sepalis* oblongo-lanceolatis obtusis, *corolla* lobis triangularibus minute cuspidatis; *androecio* lato phyllis dilatatis, subtus canaliculatis, pollinibus oblongis.

Lubok Tandai, at 1000 ft., June 1922, flowers drab, 7615.

Physostelma laurifolia Ridl.

Only some sprays of flowers were sent of this specimen, which I take to be the little-known *Cystidianthus laurifolius* Bl.,

which is hardly fully described and of which I have seen no specimens. The flowers are described as half the size of those of *P. campanulatum*, and the sepals are oblong, blunt and ciliate, which agrees with Blume's description, but the corolla-lobes can hardly be described as acute. The flowers in Brooks' specimen are crowded in a head about 30, on slender pedicels 3 cm. long; they are described as very pale brown. A specimen of Wray's collected in Perak at Relau Tujur, 4014, very closely resembles these specimens, but Gamble has passed it as *P. campanulatum*.

Lubok Tandai, at 9000 ft., flowers very pale brown, no number.

Dischidia hirsuta Decne.

Bencoolen, flowers crimson; no further locality or number.

CONVOLVULACEAE

Lettsomia parviflora Ridl. n. sp.; *L. Kunstleri* Prain affinis, differt foliis glaberrimis subpeltatis, floribus parvis capitulatis albis.

Scandens glabra; *foliis* subcoriaceis glabris ovatis subpeltatis, acuminatis basibus rotundatis, nervis 4-paribus, 10 cm. longis, 4.5 cm. latis, *petiolis* 1.5 cm. longis; *pedunculis* axillaribus 8-9 cm. longis, *cymis* in capitulo terminali 2.5-4 cm. lato, ramis 1 cm. longis, pubescentibus, *bracteis* linearibus oblongis subacutis 1.5 cm. longis, 3 mm. latis; *sepalis* 5, 3 exterioribus ovatis rotundatis sericeo-pubescentibus coriaceis, 2 interioribus glabris paullo majoribus, omnibus roseo-marginatis, *corolla* 1 cm. longa, tubo brevi, lobis 5 lanceolatis acutis coriaceis, marginibus tenuibus extus sericeis, *staminibus* 5, filamentis gracilibus basibus incrassatis corolla brevioribus, in ore tubi insertis, antheris linearibus curvis, dorsifixis, *ovario* conico canaliculato, biloculari in disco annulari lobato immerso, *stylo* gracili, *stigmatibus* bilobo, lobis parvis rotundatis.

Lubok Tandai, petals white, calyx green, no number.

The smallest flowered species known to me, with almost completely coriaceous corolla, and with the leaves nearly peltate and very shortly bilobed at the base.

GESNERACEAE

Cyrtandra bicolor Jack.

Lubok Tandai, in moist deep shade, leaf variegated deep and light green, flower cream-brown, 7189.

Common in the Malay peninsula in damp forest, where the leaves are often striped with white.

Aeschynanthus longiflorus DC.

Bencoolen; no label.

Not rare in Java.

Didymocarpus platypus Clarke var. *sumatranus* Ridl. n. var.; floribus hirtioribus minoribus, tubo corollae 2.4 cm. longo, basi 1 cm. lato, angusto superne subabrupte dilatato, pubescens.

Lubok Tandai, in shade, flowers white, May 1922, 7192.

Also collected in Dalor, Sumatra, by Curtis. This differs in the smaller flowers with the tube rather abruptly separated

into a narrow and dilate portion, and the tube being distinctly hairy, which is not the case in the Malay peninsula plant.

Didymocarpus violascens Ridl. n. sp.; *D. purpureae* Ridl. affinis sed multo hirtiore et labio inferiore corollae prolongato.

Herba caulibus ramosis hirtis gracilibus ultra 10 cm. altis; *foliis* herbaceis superne dense hirtis, subtus hirtulis, nervis longe hirtis, capillis multi-cellularibus, ovatis breviter acuminatis obtusis, basibus cuneatis, marginibus serratis dense hirtis, 5-8 cm. longis, 3-4 cm. latis, *petiolis* 2-3.5 cm. longis hirtis; *cymis* axillaribus subterminalibus, dichotomis gracilibus hirtis 8 cm. longis, ramis 2, inferiore brevi bifloro superiore 4 cm. longo, viscosis; *floribus* 8 in paribus distantibus pallide violaceis, *pedicelli* longis; *bracteis* linearibus hirtis 3 mm. longis, *sepalis* lanceolatis 2 mm. longis, *corollae* tubo cylindrico sparse pubescente 1 cm. longo, lobis valde inaequalibus, superioribus brevibus 2 mm. longis, inferiore lineari, ad apicem dilato 5 mm. longo, *staminibus* gracillimis, *ovario* cylindrico pubescente, 5 cm. longo, *stylo* filiformi 5 cm. longo, *stigmatibus* obconico, *capsula* lineari-cylindrica 4 cm. longa, 1 mm. lata.

Lubok Tandai, herb, on dry banks in deep shade, flowers pale violet, 7185.

ACANTHACEAE

Staurogyne spicata Ridl.

Lubok Tandai, in old jungle, 7101.

Sphinctacanthus viridiflorus Ridl. n. sp.; species in corollae labio superiore bilobo et inferiore integro ab omnibus distincta.

Herba glabra ultra 30 cm. alta; *foliis* herbaceis ovatis ellipticis acuminatis basibus angustatis, nervis 7-paribus arcuantibus, 12-14 cm. longis, 5.5-6 cm. latis, *petiolis* 2 cm. longis; *panicula* terminali racemiformi 11 cm. longa, *racemis* paucifloris 2 in axillis superioribus, ramis basalibus paniculae pauci-ramosis, oppositis; *floribus* superne racemosis binis, *bracteis* linearibus 2 mm. longis, *pedicellis* 5 mm. longis, *sepalis* 5 linearibus acutis 1 mm. longis, *corolla* virescente tubo brevi 5 mm. longo crasso cylindrico, labio superiore oblongo, apice bifido, lobis ovatis, extus pubescente, labio inferiore oblongo-ovato integro, *staminibus* 2 exsertis filamentis superne attenuatis, cylindricis pubescentibus, antheris ellipsoideis, loculis parallelis, inappendiculatis connectivo latiore, *stylo* filamentis aequilongo pubescente, *ovario* oblongo obtuso glabro, *disco* parvo annulari.

Lubok Tandai, flowers pale green, no number.

Peristrophe acuminata Nees.

Lubok Tandai, shrub in old jungle, flowers pale violet, 7165.

VERBENACEAE.

Vitex gamosepala Griff.

Lubok Tandai, at 1400 ft., in undergrowth on clearing, 7168: tree in undergrowth, flowers yellow, 7604.

Clerodendron Brooksii Ridl. n. sp.; *C. eriosiphon* Schauer, affinis sed vix hirta, sepalis lanceolatis acutis hirtis nec setaceis, corolla minute puberula.

Suffrutex; *foliis* herbaceis glabris oblongo-ob lanceolatis acuminatis basibus obtusis subrotundatis, angustatis, marginibus sinuatis, nervis 7-8-paribus tenuibus, costa subtus elevata, 22 cm. longis, 8.4 cm. latis, *petiolis* 2 cm. longis; *panicula* terminali laxa erecta 13 cm. longa, *pedunculo* 4 cm. longo, *bracteis* linearibus acutis 1 cm. longis, *bracteolis* similibus minoribus, *pedicellis* gracilibus 7 mm. longis, *sepalis* lanceolatis acuminatis acutis basi connatis, 5 mm. longis puberulis, *corolla* alba puberula, tubo gracili 1 cm. longo, lobis oblongis rotundatis extus puberulis, *staminibus* longe exsertis filiformibus, antheris oblongo-linearibus, basibus bifidis.

Lubok Tandai, flowers white, 9240.

Allied to *C. eriosiphon* Schauer, but the plant is almost entirely glabrous, the sepals broader and shorter, the corolla not hairy but minutely puberulous.

ARISTOLOCHACEAE

Aristolochia glaucifolia Ridl. n. sp.; *A. Tagalae*, affinis sed foliis hastatis subtus glaucis, floribus minoribus labello hirtis.

Scandens gracilis glabra; *foliis* remotis hastatis acuminatis acutis, lobis basalibus latis oblongis rotundatis, superne laevibus subtus glaucis e basi trinervis, nervulis et reticulationibus conspicuis 8-9 cm. longis, ad bases sinuum 5 cm. latis, lobis 2 cm. longis, 1 cm. latis, *petiolis* 3 cm. longis; *floribus* singulis in axillis 3.5 cm. longis, *pedicellis* 0.5 mm. longis, *perianthii* tubo ad basin oblongo dilatato 1 cm. longo, superne angusto cylindrico 5 mm. longo, 5 mm. lato, *androecio* parvo cylindrico, *antheris* 6.

Bencoolen. No label.

EUPHORBIACEAE

Glochidion Brooksii Ridl. n. sp.; affinis *G. leiostylo* Kurz., sed foliis majoribus, stigmatibus brevioribus, fructu majore.

Arbor parva, glabra ramulis albescentibus; *foliis* tenuiter coriaceis ellipticis longe acuminatis basibus cuneatis, nervis paribus 5 subtus elevatis, nervulis transversis paucis, costa puberula, 11-12 cm. longis, 4-4.5 cm. latis, *petiolis* 3 mm. longis; *floribus masculis* albis in fasciculis axillaribus, saepe cum femineis mixtis, *pedicellis* gracilibus pubescentibus 5 mm. longis, *sepalis* 4 late lanceolatis 2 mm. longis extus pubescentibus, *petalis* 2, ovatis acutis glabris, *staminibus* 3 antheris linearibus connatis sessilibus, connectivis connatis in capitulo nigro, *floribus femineis* sessilibus, *sepalis* et *petalis* ut in masculis, *stigmatibus* 3 cylindricis erectis 2 mm. longis pubescentibus, *capsula* triloba pubescente 8 mm. longa, seminibus glabris castaneis dorsis rotundatis 5 mm. longis.

Lubok Tandai, at 900 ft., small tree, flowers white, 7600.

Daphniphyllum laurinum Baill.

Lubok Tandai, at 900 ft., straggling shrub, flowers white, 7612.

Trigonostemon longisepala Ridl. n. sp.; a *T. salicifolia* Ridl., differt foliis ferme sessilibus, sepalisque linearibus quam petala multo longioribus.

Frutex glaber; *foliis* tenuiter coriaceis subsessilibus anguste lanceolatis acuminatis obtusis, ad bases obtusos angustatis, marginibus remote serratis, nervis ad 10-paribus tenuibus costa superne elevata subtus plana, 15–20 cm. longis, 2.5–3 cm. latis, *petiolis* 3 mm. longis crassis; *floribus masculis* non visis, *floribus femineis* dissitis in racemo gracili axillari, rufo-brunneis, *bracteis* minutis linearibus, *pedicellis* gracilibus 6 cm. longis, *sepalis* 5 linearibus carnosus 5 mm. longis, *petalis* multo minoribus ovatis pustulatis carnosus, *ovario* globoso, *stigmatibus* 5 recurvis glabris crassis, disco annulari margine carnosus elevato.

Lubok Tandai, shrub in shade, flowers red brown, 8274.

Trigonostemon Beccarii Ridl. n. sp.; differt a praecedente in floribus paniculatis in ramis brevissimis, sepalisque ovatis quam petalis minoribus.

Frutex ramosus ramis pallidiusculis longitudinaliter rugosis; *foliis* in apicibus congestis coriaceis glabris lanceolatis acuminatis basibus angustatis obtusis, marginibus remote denticulatis, nervis subtus vix elevatis 7-paribus, 7–11 cm. longis, 1.5–2.5 cm. latis, *petiolis* 3 mm. longis; *floribus masculis* 4 mm. latis in paniculis racemiformibus axillaribus gracilibus 4 cm. longis, ramis 4 mm. longis remotis, *bracteis* persistentibus ovatis minutis, *sepalis* 5 oblongis obtusis, *petalis* 5 ovatis pustulatis carnosus majoribus, *staminibus* 5 in columnam connatis, antheris decurvis oblongis, connectivo lato pustulato, *disco* lobis distinctis 5 oblongis, *floribus femineis* et *fructibus* non visis.

Sumatra, Sungei Buluh, Padang, *Beccari* 965.

These species so closely resemble each other that they might be taken for the two sexes of one plant, but they differ in the very long sepals in *T. longisepala*, those of *T. Beccarii* being much shorter than the petals, in the racemose inflorescence, and some slighter characters in the foliage. With the allied *T. salicifolius* Ridl., of the Malay peninsula which has inter alia long-petioled leaves they belong to the 5-stamened group, *Enchidium* Jack (*Telogyne* Pax).

Baccaurea parviflora Muell. Arg.

Lubok Tandai, a small tree in undergrowth, flowers yellow brown, 8273.

Croton confusum Gage.

Lubok Tandai, a small tree in undergrowth, flowers white, 7606.

Macaranga triloba Muell. Arg.

Lubok Tandai, a tree in old jungle, 7179.

Macaranga Brooksii Ridl. n. sp.; affinis *M. bicolori* Muell. Arg., sed glabra, cum bracteis multo majoribus et cuspidatis.

Arbor parva, ramis juvenilibus glaucis, perulis dense cinnamomeo-lanatis oblongis 1 cm. longis, *stipulis* hastato-ovatis acuminatis ad bases; *foliis* ovatis peltatis cuspidatis, subtus violaceo-albis glabris, nervis 6 e basi, costa mediana cum 5-paribus, nervis tenuibus arcuantibus, 12 cm. longis, 7 cm. latis, *petiolis* 8 cm. longis, 2.5 cm. a margine basali junctis; *paniculis masculis* 10–14 cm. longis basibus glabris superne pubescentibus, *bracteis* caducis lanceolatis acuminatis 5 mm. longis, *pedicellis* 1 cm. longioribus vel multo minoribus floribus terminalibus sessilibus, bracteis late ovatis cuspidatis utrinque velutinis floribus in una bractea 6, brevissime pedicellatis, *sepalis* ovatis pubescentibus, *staminibus* 3, antheris 4-ocularibus, *floribus femineis* et *fructibus* ignotis.

Lubok Tandai, a small tree over streams, 7102.

URTICACEAE

Ficus urophylla Wall.

Lubok Tandai, common, 6677.

Ficus obscura Bl.

Lubok Tandai, a massive growth on trees, 6679.

Villebrunea sylvatica Bl.

Lubok Tandai, a small tree, branches covered with white waxy fruits, 6680.

Elatostemma sylvanum Ridl. n. sp.; species affinis *E. paludoso* Miq., sed glabrescens, marginibus foliorum leviter crenulato-serratis.

Caulis gracilis hirtus; *foliis* herbaceis inaequaliter oblongo-ob lanceolatis acutis basibus obtusis, marginibus crenulato-serratis, superne glabris, raphidibus subtus costa et nervis elevatis 6-paribus appresse hirtis, 8–11 cm. longis, 2–3 cm. latis, *petiolis* 1–2 mm. longis hirtis, *stipulis* lanceolatis cuspidatis raphidibus copiosis, 1 cm. longis, 4 mm. latis; *floribus masculis* in pedicello gracili 4–5.5 cm. longo, capitulis 1 cm. latis, *bracteis* ovatis cuspidatis inaequalibus glabris, *sepalis* ovatis, *staminibus* albis 4, *floribus femineis* non visis.

Lubok Tandai, herb in shady jungle, 7099.

ORCHIDACEAE

Dendrobium (Aporum) **roseo-striatum** Ridl. n. sp.; *D. lobulato* Rolfe affinis, sed flos brevior mento scrotiformi, callo labelli semicirculari.

Epiphytica, *caulibus* basibus teretibus superne complanatis, dimidio superiore efoliato vaginis pallidis tecto, 35 cm. altis; *foliis* coriaceis oblongo-lanceolatis acutis 1 cm. longis, 6 mm. latis, vaginis 1 cm. longis applanatis superioribus in parte nudo 2 cm. longis striatis apicibus obtusis; *floribus* in capitulis in apicibus congestis roseo-striatis 5 mm. longis, *bracteis* pluribus

ovatis mucronatis striatis, *sepalo* postico lanceolato, lateralibus late triangularibus, mento crasso in apice globoso scrotiforme, *petalis* parvis lanceolato-oblongis pallidis, *labello* 5 mm. longo ungue longo recto oblongo, nervis 2 carnosis elevatis ad callum currentibus, callo semicirculari, lobo medio late rotundato bilobo, tenuiore, *gynostemio* brevi, *stelidiis* ovatis acutis, *anthera* transverse oblonga alba.

Lubok Tandai, flowers streaked with pink, 7930.

Bulbophyllum subverticillatum Ridl. n. sp.; *B. linearifolio* Ridl. affinis sed floribus pseudo-verticillatis, minutis.

Epiphyta rhizomate crassiusculo, *pseudobulbis* oblongis crassis brevibus, 6 mm. longis; *foliis* oblongo-ob lanceolatis apicibus inaequilateralibus basi angustatis, costa subtus prominente 20 cm. longis, 4-5 cm. latis, petiolis 12 cm. longis; *scapo* gracili 15 cm. longo, basi 7 cm. nudo, vaginis paucis excepto, *racemo* multifloro; *floribus* albis perparvis ad 60, in pseudo-verticillis distantibus, *bracteis* lanceolatis acuminatis deflexis, in apice racemi comosis 1 mm. longis, *pedicellis* gracilibus 3 mm. longis, *sepalis* lanceolatis obtusis patentibus 2 mm. longis, basi gibbosis, *petalis* brevissimis ovatis lanceolatis, *labello* oblongo-lanceolato acuto, lateribus elevatis rotundatis, *sepalo* dimidio aequante, *gynostemio* lato pedo aequilongo, *stelidiis* erectis acuminatis acutis petalis ferme aequantibus.

Lubok Tandai, 9238.

Remarkable for the flowers being chiefly collected together in false whorls on a greater part of the raceme. The flowers are very small, even for this section.

Eria Forbesiana Kraenzl.

Lubok Tandai, on trunks, flowers white, 7366.

Kraenzlin only saw and described a spray of flowers, and this plant differs from his description and figure in having a rounded, not rhomboidal terminal lobe to the lip. The stem of this species is rather slender, leaves oblong-linear, unequally bilobed, blunt, 14 cm. long, 2 cm. wide, petioles 1 cm. long.

Agrostophyllum tricuspidatum J. J. Sm.

Lubok Tandai, 9001.

Coelogyne Mayeriana Rehb. fil.

Tamshak Sawah, flowers pale green with black lines on the labellum, no number.

Coelogyne vermicularis J. J. Sm.

Lubok Tandai, leaves dull brown, flowers dull pink, 1902.

Dipodium pictum Rehb. fil.

Lubok Tandai, flowers light brown with red-brown blotches, labellum white, 7369.

Thrixspermum arachnites Rehb. fil.

Lubok Tandai, flowers with red patches on labellum, streamers (petals and sepals) yellow, other parts white, no number.

Podochilus lucescens Bl.

Lubok Tandai, 7601.

Appendicula reflexa Bl.

Lubok Tandai, an epiphyte, in old jungle, 7106.

Didymoplexis pallens Griff.

Lubok Tandai, in moist shady places, 6682.

The thread-like contents of the capsule when examined by a lens had a wriggling motion by which they freed themselves and then floated away in the air.

SCITAMINEAE

Camptandra parvula Ridl.

Lubok Tandai, at 1000 ft., in moist shade, flowers white with yellow marks on lip, 7169.

A new addition to the flora of Sumatra. The species occurs in the Malay peninsula. The leaves of the Sumatran form are longer and narrower than in the peninsular form.

Alpinia javanica Bl.

Lubok Tandai, in old jungle, flowers white, 7181.

Elettariopsis aquatilis Ridl. n. sp.; *E. longitubae* Ridl. affinis sed caulibus elevatis, calyce brevior, corolla tubo brevior, floribus singulis differt.

Caulis foliatus 5 m. altus; *foliis* lineari-oblongis cuspidatis basibus longe angustatis superne glabris, subtus cum marginibus molliter hirtulis 75 cm. longis, 11 cm. latis, *petiolis* 4-5 cm. longis hirtulis, ligulis ovatis acuminatis bifidis 1 cm. longis vaginis pubescentibus cancellatis; *paniculis* prostratis 30 cm. vel longioribus, validulis; *floribus* singulis in axillis bractearum lanceolarum acutarum 4 cm. longarum 5 mm. latarum, *pedicellis* curvis 5 mm. longis, *calyce* spathaceo fisso, apice trifido, glabro, 2 cm. longo, *corollae* tubo brevior, lobis oblongis obtusis 1 cm. longis, *labello* obovato obscure trilobo 2 cm. longo, 1 cm. lato, *anthera* brevi oblongo-obtusa.

Lubok Tandai, at 1000 ft., 7923.

The leaf (leafy stem) is 15 feet long, and is found by or in shallow water; the white flowers are borne on the creeping rhizome and appear above the surface of the water. This remarkable species is allied to *E. longituba*, differing in its very tall stems, much shorter calyx and corolla-tube and solitary flowers.

Donax grandis Ridl.

Lubok Tandai, 7183.

Of high growth, somewhat bamboo-like, with white flowers.

Phrynium hirtum Ridl.

Lubok Tandai, at 900 ft., flowers white, 7602.

AROIDEAE

Epipremnopsis Huegeliana Engl.

Lubok Tandai, at 1000 ft., an epiphyte on trunks, 7365.

Pothos longipedunculata Ridl. n. sp.; *P. Cumingiano* affinis sed foliis majoribus longe cuspidatis nervis intramarginalibus conspicuis, pedunculis longis, spatha anguste lanceolata acuminata.

Epiphyta caulibus lignosis teretibus; foliis coriaceis lanceolatis longe cuspidatis basibus longe acuminatis, costa subtus prominente, nervis subtus numerosis, cum nervulis et reticulationibus subtus prominulis, nervo intramarginali conspicuo 6 mm. a margine distante, 27 cm. longis, 7 cm. latis, petiolis 1-4 cm. longis superne geniculatis, canaliculatis; pedunculis gracilibus 10 cm. longis, bractea basali coriacea ovata 0.5 cm. longa, bractea secunda lineari-obtusa 2 cm. longa, 3 mm. lata, spatha lanceolata acuminata 4 cm. longa, 6 mm. lata, spadice 2 cm. longo cylindrico, lobis perianthii oblongis, apicibus latis reniformibus, stigmate rotundato.

Bencoolen; without precise locality or number.

This is allied perhaps most nearly to *P. Cumingiana* of the Philippines, but the leaves are much longer with a cusp 3 cm. long, and with a distinct intramarginal nerve, a long slender peduncle, and longer spathe.

MUSCI (by H. N. DIXON)

Mr. Ridley has entrusted to me one or two specimens of mosses found as epiphytes on plants collected in Sumatra by Mr. C. J. Brooks.

One of these, on *Pentaphragma*, from Lubok Tandai, Bencoolen, is *Distichophyllum cuspidatum* Doz. & Molk., an Indo-Malay species already recorded from Sumatra and extending to New Guinea and the Pacific.

The other specimen proved of much greater interest. It comprised two twigs of a Melastomaceous shrub (*Dactyliota setigera*), from Toko Rottan, Bencoolen. One of these was covered with a species of *Chaetomitrium* which agrees in habit and vegetative structure with *C. lancifolium* Mitt., in Voy. H.M.S. Challenger iii. p. 212, of which, however, it is a small form. It is unfortunately sterile, and the determination cannot be made absolutely in the absence of fruit, but with this reservation I have little hesitation in referring it, as a *forma minor*, to Mittens' species. It has not I believe been found elsewhere except in its original station in the Aru Is., south-west of New Guinea.

The second twig contained two still more interesting species. One of these was the very distinct *Dimorphocladon bornense* Dixon, a Hookeriaceous genus described by me from Sarawak (cf. Journ. of Bot. 1922, p. 109), and subsequently found among Forbes' plants from British New Guinea, the present therefore making the third record.

Finally a minute brown velvety tuft among the *Dimorphocladon* proved to be the remarkable *Ephemeropsis tjibodensis* Goeb., described by Goebel as the simplest form of Moss (Die ein-

fachste Form der Moose) and fully elaborated in later publications by Fleischer.

The vegetative portion consists entirely of the brown protonema, from which the ♂ and ♀ organs spring. No fruit is present in the Sumatran specimen, but the erect "Assimilations organs" are very conspicuous, and distinguish the plant at once from the ordinary protonemoid growths of other Bryophytes.

Ephemeropsis has hitherto been recorded only from Java. Fleischer (Musci der Flora von Buitenzorg, 111, 948) states that it has only been found in a single station (Tjibodas) in West Java. I detected it however, in small quantity recently among some Javan mosses collected in 1921 on Patoeka Berg at 2000–2500 m., on leaves, by Dr. P. van Oye (♂ plant); "on tree, Patengan" being the more exact locality; Patoeka Berg is in the Preanger Province, on the south-western side of the island.

The plant is minute and may easily have been overlooked, but it is none the less certainly of great rarity, and its discovery in Sumatra is of the highest interest.

XIII.—MISCELLANEOUS NOTES.

The following appointments have been made by the Secretary of State for the Colonies:—Mr. C. MC. H. H. SUTHERLAND, B.Sc., District Agricultural Officer, Tanganyika Territory; Mr. F. N. HOWES, M.Sc., Botanist, Research Branch, Agricultural Department, Gold Coast; Mr. E. I. NISBETT, Provincial Superintendent, Agricultural Department, Sierra Leone.

WILLIAM WATSON.—The lamented death of Mr. W. Watson, A.L.S., V.M.H., late Curator of the Royal Botanic Gardens, Kew, was briefly recorded in the last number of the *Kew Bulletin*. He retired from his official duties on June 24th, 1922, after forty-three years of devoted service, and it was hoped by his former colleagues and by his many friends throughout the Empire, in Europe and in America that he would live to enjoy many active and happy years in his retirement. This was not to be. In the autumn of last year it was learnt at Kew with deep regret that he was seriously ill, and as the winter progressed it became evident that there was little hope of his recovery. He died at St. Albans on January 30th, and was buried in the cemetery there on February 2nd, the Director, Curator, and three Assistant Curators attending the ceremony.

Mr. Watson was born at Garston near Liverpool on March 13th, 1858, and after several years' experience in other establishments he came to Kew in July, 1879, from the nursery of Messrs. Hugh Low and Co., then of Clapton. His first appointment was that of Foreman and plant propagator. In 1886 he was promoted to be Assistant Curator with special charge of the collections under glass, and on August 1st, 1901, he succeeded the late Mr. George Nicholson as Curator.

The appointment was a very appropriate one, for Mr. Watson already stood in the very first rank of what may be termed botanical gardeners, uniting a rare skill as a cultivator with a keen love of plants for themselves. In the great revival of Kew as a horticultural as distinct from a botanical centre, which took place under the directorate of Sir William Thiselton-Dyer, he played a great part, the chief part indeed so far as the indoor collections were concerned. His knowledge of tropical and sub-tropical plants was probably unrivalled, and he had a wonderful faculty for divining the needs of a plant he had never seen before. To an establishment like Kew, where plants new to cultivation are constantly arriving, this was a very valuable asset.

Although Watson enjoyed no great educational facilities as a boy, he had the natural literary faculty, and commencing to write shortly after he came to Kew soon developed into one of the leading horticultural writers of his time. The numerous articles he wrote for the horticultural press during the last forty years were always stimulating in the original and forcible views they expressed. If ever stove and greenhouse plants come into general cultivation again persons studying their needs will find no other such mine of information. In the early eighties of last century he contributed numerous papers to the *Gardeners' Chronicle* on the *Palmaceae*, which it was intended to reprint in book form, but owing probably to a declining public interest in palms, this was never done. In late years he took a special interest in *Cacti* and other succulents, and the magnificent collection Kew now possesses of these plants is due largely to his enthusiasm for them. His "Cactus Culture for Amateurs" is a popular standard work. He also wrote books on "Rhododendrons and Azaleas", "Climbing Plants", and, in collaboration with W. J. Bean, "Orchids: their culture and management." To volume XV of the "Annals of Botany" he contributed a paper "On the Germination of *Bertholletia excelsa*." He edited the new edition of "Thompson's Gardener's Assistant" brought out in 1902, and in his capable hands this great standard work for gardeners in general was so much improved as to become practically new.

He was awarded the Veitch Memorial Medal in 1891, chiefly for his work in hybridising *Streptocarpus*: the Victoria Medal of Honour by the Royal Horticultural Society in 1916; and was elected an Associate of the Linnean Society in 1904. Nothing, however, gave him greater pleasure than to have his name enshrined in the venerable pages of the Botanical Magazine. Sir Joseph Hooker dedicated to him Volume 130 in the following words:—

"Dear Mr. Watson,

"The dedication to you of the last volume of the Botanical Magazine which I am privileged to conduct, gives me the welcome opportunity of expressing my sense of the value of

the services which you have rendered to this work during your Curatorship of the Royal Botanic Gardens. This is due to the skill and knowledge which you have devoted to raising and flowering an unprecedentedly large proportion of the rare, interesting and beautiful plants portrayed in the last twenty volumes of the Magazine, and to the valuable information which you have so often given me of the habits, history and mode of culture of these and of many other species whose portraits accompany them.

"In conclusion, let me congratulate you on the recognition you have so fairly earned as an authority on the culture of Cacti, Palms, Aloes, Agaves and other large groups of plants, in your study of which you have displayed as accurate a knowledge of their physiological characteristics as of their requirements under cultivation."

DR. HORACE T. BROWN.—We record with deep regret the death, on February 6th, of Dr. Horace Brown, LL.D., F.R.S.

During the years 1897 to 1901 Horace Brown was engaged in research work on Plant Physiology in the Jodrell Laboratory, in collaboration with Mr. F. Escombe. The main subjects of these researches related to the assimilation of carbon by green plants and the interchange of energy between the leaf and its surroundings.

The results of these important researches were published in the following series of papers in the Proceedings and Transactions of the Royal Society. They also supplied the subject matter for the Bakerian lecture "The Reception and Utilisation of Energy by a Green Leaf," delivered by Horace Brown at the Royal Society on March 25th, 1905.

Note on the Influence of very Low Temperatures on the Germinative Power of Seeds. Proc. Roy. Soc., vol. 62 (1897), pp. 160-165.

On the Depletion of the Endosperm of *Hordeum vulgare* during germination. Proc. Roy. Soc., vol. 63 (1898), pp. 3-25.

Static Diffusion of Gases and Liquids in relation to the Assimilation of Carbon and Translocation in Plants. Phil. Trans. Roy. Soc., B., vol. 193 (1900), pp. 223-292.

The Influence of Varying Amounts of Carbon Dioxide in the Air on the Photosynthetic Process of Leaves and on the Mode of Growth of Plants. Proc. Roy. Soc., vol. 70 (1902), pp. 397-413.

Researches on some of the Physiological Processes of Green Leaves, with Special Reference to the Interchange of Energy between the Leaf and its Surroundings. Proc. Roy. Soc., vol. 76B (1905), pp. 29-111.

On a New Method for the Determination of Atmospheric Carbon Dioxide, based on the Rate of its Absorption by a Free Surface of a Solution of Caustic Alkali. Proc. Roy. Soc., vol. 76B (1905), pp. 112-117.

On the Variations in the Amount of Carbon Dioxide in the Air of Kew during the years 1898-1901. Proc. Roy. Soc., vol. 76B (1905), pp. 118-121.